

EXHIBIT NO. PTX-001 evid.
CAUSE NO. 3:22cv734-DPJ-HSO-LHS
WITNESS: _____
CLERK: SHONE POWELL

FEB 26 2024

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF MISSISSIPPI
Gondie Crane, REPORTER

**IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF MISSISSIPPI
NORTHERN DIVISION**

MISSISSIPPI STATE CONFERENCE OF THE
NATIONAL ASSOCIATION FOR THE
ADVANCEMENT OF COLORED PEOPLE;
DR. ANDREA WESLEY; DR. JOSEPH
WESLEY; ROBERT EVANS; GARY
FREDERICKS; PAMELA HAMNER;
BARBARA FINN; OTHO BARNES;
SHIRLINDA ROBERTSON; SANDRA
SMITH; DEBORAH HULITT; RODESTA
TUMBLIN; DR. KIA JONES; ANGELA
GRAYSON; MARCELEAN ARRINGTON;
VICTORIA ROBERTSON,

Plaintiffs,

vs.

STATE BOARD OF ELECTION
COMMISSIONERS; TATE REEVES, *in his
official capacity as Governor of Mississippi;*
LYNN FITCH, *in her official capacity as
Attorney General of Mississippi;* MICHAEL
WATSON, *in his official capacity as Secretary
of State of Mississippi.*

Defendants.

3:22-cv-734-DPJ-HSO-LHS

DECLARATION OF WILLIAM S. COOPER

3:22-cv-734

PTX-001

PTX-001-001

WILLIAM S. COOPER, acting in accordance with 28 U.S.C. § 1746, Federal Rule of Civil Procedure 26(a)(2)(B), and Federal Rules of Evidence 702 and 703, does hereby declare and say:

I. INTRODUCTION

A. Redistricting Experience

1. My name is William S. Cooper. I have a B.A. in Economics from Davidson College. As a private consultant, I was retained as a demographic and redistricting expert for the Plaintiffs. I am compensated at a rate of \$150 per hour, and my compensation is not contingent on the outcome of this litigation. I reserve the right to continue to amend or supplement my reports, including in light of additional facts, testimony, and/or materials that may come to light over the course of the discovery period in this case.

2. I have been accepted as an expert trial witness on redistricting and demographics in about 50 federal-court voting rights cases across 18 states, including Mississippi. Five of those cases, including one in Mississippi (*Thomas v. Reeves*), resulted in changes to statewide legislative boundaries.¹ Approximately 25

¹ The five are *Rural West Tennessee African-American Affairs Council, Inc. v. McWherter*, No. 92-cv-2407 (W.D. Tenn. 1995); *Old Person v. Brown*, No. 96-cv-0004 (D. Mont. 2002); *Bone Shirt v. Hazeltine*, No. 01-cv-3032 (D.S.D. 2004); *Alabama Legislative Black Caucus v. Alabama*, No. 12-cv-691 (M.D. Ala. 2017), and *Thomas v. Reeves*, No. 18-cv-441 (S.D. Miss. 2019). In *Bone Shirt*, the court also adopted the remedial plan I developed.

of those cases led to changes in local election district plans.² In one recent case where I testified as an expert, the U.S. Supreme Court affirmed a preliminary injunction ordering changes to the U.S. Congressional districting plan in Alabama.³ My testimony in such cases almost always includes a review of the demographics and socioeconomic characteristics of the jurisdiction or jurisdictions at issue. In Voting Rights Act cases, I also typically produce one or more illustrative districting plans for the jurisdiction.

3. In 2022 and 2023, I have testified as an expert in redistricting and demographics in eight cases challenging district boundaries under Section 2 of the Voting Rights Act: *Caster v. Merrill*, No. 21-1356-AMM (N.D. Ala. 2022), *Pendergrass v. Raffensperger*, No. 21-05337-SCJ (N.D. Ga. 2022), *Alpha Phi Alpha Fraternity v. Raffensperger*, No. 21-05339-SCJ (N.D. Ga. 2022), *NAACP v. Baltimore County*, No. 21-cv-03232-LKG (D. Md. 2022), *Christian Ministerial Alliance v. Hutchinson* No. 19-cv-402-JM (E.D. Ar. 2022), *Robinson v. Ardoin*, No. 22-cv-00211-SDD-SDJ (M.D. La. 2022), *Caroline County Branch of the NAACP v.*

² I have also served as an expert witness on demographics in trials relating to issues other than voting and redistricting. For example, I served as an expert in *Stout v. Jefferson County Board of Education*, No. 65-cv-00396 (N.D. Ala. 2017), a school desegregation case involving the City of Gardendale, Alabama. In 2023, I testified at trial in another school desegregation case involving the St. Martin Parish School Board – *Thomas v. St. Martin Parish School Board*, No. 65-cv-11314 (W.D. La. 2023).

³ *Singleton v. Merrill*, 582 F. Supp. 3d 924, 977 (N.D. Ala. 2022); *Allen v. Milligan*, 143 S. Ct. 1487 (2023).

Town of Federalsburg, No. 23-00484-SAG (D. Md. 2023), and *Dickinson Bay Area NAACP Branch v. Galveston County*, No. 22-cv-117-JVB (S.D. Tex. 2023).

4. I also testified at trial in 2022 as an expert on demographics in *Florida NAACP v. Lee*, No. 21-cv-187-MW-MAF (N.D. Fla. 2022), a case involving recent changes to Florida election law.

5. With respect to my work in Mississippi, I served as an expert witness in redistricting and demographics in *Thomas v. Reeves*, No. 18-cv-441 (S.D. Miss. 2019), a Voting Rights Act case which resulted in the revision of Mississippi State Senate District lines in the Mississippi Delta. In addition to the *Thomas* case, I have testified at trial in two other state-level voting lawsuits in Mississippi: *NAACP v. Fordice*, No. 92-CV-250 (S.D. Miss 1999), which involved the districts used for the Public Service Commission and Transportation Commission, and *Smith v. Clark*, No. 01-CV-855 (S.D. Miss 2002), which involved congressional redistricting in Mississippi.

6. I currently serve as a proposed redistricting and demographics expert for the plaintiffs in *White v. State Board of Election Commissioners*, No. 22-cv-62 (N.D. Miss. 2023). This matter involves election districts for the Mississippi State Supreme Court and has not yet proceeded to trial.

7. I have testified at trial over the past three decades as a redistricting and demographics expert in several local-level voting cases in Mississippi – in the 1990s⁴, 2000s⁵, and 2010s⁶.

8. I have also developed election plans that were adopted by the following local governing bodies in Mississippi: in the 1990s – Webster County; in the 2000s – Bolivar County and Webster County; and in the 2010s – Bolivar County, Claiborne County, and the City of Grenada. In 2022, I developed election plans that were adopted by the Bolivar County Board of Supervisors and the Washington County Board of Supervisors. I am currently developing redistricting plans for the City of Grenada.

9. For additional historical information on my testimony as an expert witness and experience preparing and assessing proposed redistricting maps for Section 2 litigation, a summary of my redistricting work is attached as **Exhibit A**. A listing of Mississippi voting cases where I have filed declarations but did not

⁴ See, e.g., *Addy v. Newton County*, No. 95-cv-39 (S.D. Miss. 1997); *Gunn v. Chickasaw County*, No. 87-cv-165 (N.D. Miss. 1989); *Nichols v. Okolona*, No. 97-cv-00030 (N.D. Miss. 1995).

⁵ See, e.g., *Fairley v. Hattiesburg*, No. 06-cv-167 (S.D. Miss. 2008); *Boddie v. Cleveland School District*, No. 07-cv-63 (N.D. Miss. 2010); *Jamison v. City of Tupelo*, No. 07-cv-366 (N.D. Miss. 2007).

⁶ *Fairley v. City of Hattiesburg*, No. 13-cv-18 (S.D. Miss. 2015).

testify at trial is also available in **Exhibit A**. Six of the lawsuits where I filed declarations resulted in changes to local redistricting plans.

B. Purpose of Report

10. The attorneys for the Plaintiffs in this case have asked me to determine whether the Black population in Mississippi is “sufficiently large and geographically compact”⁷ to allow for the creation of additional majority-Black voting age population (“BVAP”) districts in the Mississippi State Senate and the Mississippi State House. Unless indicated otherwise, I use the Any Part Black census definition when discussing Mississippi’s Black population.⁸

11. The attorneys also asked me to review historical and current demographics (reported in the decennial Census published by the U.S. Census Bureau), as well as socioeconomic characteristics reported in the annual releases of the *American Community Survey* (“ACS”) for African Americans and non-Hispanic Whites.

⁷ *Thornburg v. Gingles*, 478 U.S. 30, 50 (1986).

⁸ In this report, “Black” and “African American” are synonymous, as are “Latino” and “Hispanic,” and “White” and “non-Hispanic White.” “Black” refers to persons of all ages who are any part Black (“AP Black”), i.e., single-race Black or more than one race and some part Black. The “AP Black” classification includes all persons who self-identified in the Census as single-race Black or some part Black, including Hispanic Black. It is my understanding that following the U.S. Supreme Court decision in *Georgia v. Ashcroft*, 539 U.S. 461 (2003), the “Any Part” definition is the appropriate Census classification to use in most Section 2 cases.

C. Methodology

12. **Exhibit B** describes the sources and methodology I have employed in the preparation of this report and the illustrative plans described below. Briefly, I used the Maptitude software program as well as data and shapefiles from the U.S. Census Bureau and the Mississippi Automated Resource Information System “MARIS”, among other sources.

13. I used incumbent address information based on a partial list of addresses posted on the Mississippi Legislature’s website, as well as a partial list of incumbent addresses provided by the Defendants to the attorneys for the Plaintiffs on August 15, 2023. Under the illustrative plans, at least two Senate districts and at least four House districts have paired incumbents.

14. Additional information is needed to further reduce or eliminate incumbent pairings. I anticipate revising the illustrative plans to further take into account updated incumbent addresses.

D. Summary of Expert Conclusions

15. I have reached the following conclusions:

- Based on the 2020 Census, Black Mississippians are sufficiently numerous and geographically compact to allow for at least four additional majority-Black State Senate districts, while adhering to traditional redistricting principles.

- Based on the 2020 Census, Black Mississippians are sufficiently numerous and geographically compact to allow for at least three additional majority-Black State House districts, while adhering to traditional redistricting principles.
- As reported in the *1-Year ACS* and the *5-Year ACS*, a demographic survey published by the U.S. Census Bureau, in Mississippi non-Hispanic Whites significantly outpace Black Mississippians across most key indicators of socioeconomic well-being; Black-White disparities are also widespread at the regional, county, and municipal levels.

E. Organization of Report

16. The remainder of this declaration is organized as follows:
17. **Section II** reviews current and historical demographics at the statewide, regional, and county levels.
18. **Section III** presents an illustrative Senate Plan, based on the 2020 Census, containing 19 majority-Black Senate districts, four more than the 15 majority-Black districts under the 2022 Senate Plan.
19. **Section IV** presents an illustrative House Plan, based on the 2020 Census, containing 45 majority-Black House districts, three more than the 42 majority-Black districts under the 2022 House Plan.

II. DEMOGRAPHIC PROFILE OF MISSISSIPPI

A. Statewide Population – 2000 to 2020

20. The table in **Figure 1** presents the population of Mississippi by race and ethnicity as reported in the 2000, 2010, and 2020 decennial censuses.

**Figure 1: Mississippi – 2000 to 2020 Census
Population by Race and Ethnicity**

All Ages.	2000	Percent of Total Population	2010	Percent of Total Population	2020	Percent of Total Population	2000- 2020 Change	Percent 2000-2020 Population Change
Total Population	2,844,658	100.00%	2,967,297	100.00%	2,961,279	100.00%	116,621	4.10%
NH White*	1,727,908	60.74%	1,722,287	58.04%	1,639,077	55.35%	-88,831	-5.14%
Total Minority Pop.	1,116,750	39.26%	1,245,010	41.96%	1,322,202	44.65%	205,452	18.40%
Latino	39,569	1.39%	81,481	2.75%	105,220	3.55%	65,651	165.92%
NH Black*	1,028,473	36.15%	1,093,512	36.85%	1,079,001	36.44%	50,528	4.91%
NH Asian*	18,349	0.65%	25,477	0.86%	32,305	1.09%	13,956	76.06%
NH Hawaiian and PI*	569	0.02%	948	0.03%	1,037	0.04%	468	82.25%
NH American Indian and Alaska Native	11,224	0.39%	13,845	0.47%	14,019	0.47%	2,795	24.90%
NH Other*	1,294	0.05%	1,828	0.06%	7,174	0.24%	5,880	454.40%
NH Two or More Races	20,021	0.70%	27,919	0.94%	83,446	2.82%	63,425	316.79%
SR Black (Single-race Black)	1,033,809	36.34%	1,098,385	37.02%	1,084,481	36.62%	50,672	4.90%
AP Black (Any Part Black)	1,041,708	36.62%	1,115,801	37.60%	1,123,613	37.94%	81,905	7.86%

* Single-race, non-Hispanic.

21. According to the 2020 Census, non-Hispanic Whites comprise 55.35% of the population in Mississippi – down from 58.04% in 2010 and 60.74% in 2000. African Americans (*i.e.*, Any Part Black individuals) are the next largest racial/ethnic category, representing 37.94% of the population in 2020 – the highest proportion of any state in the nation and up slightly from 37.60% in 2010. Latinos

registered significant gains between 2010 and 2020, representing 3.55% of the statewide population in 2020 – up from 2.75% in 2010.

22. In absolute terms, Mississippi has grown by 116,621 persons between 2000 and 2020. Growth in the African-American population, which increased by 81,905, is the single largest driver of overall population growth, along with the growth of other racial minority groups. Mississippi's White population fell by 88,831 during that same period.

B. Statewide Voting Age Population (2000 to 2020)

23. As shown in **Figure 2**, in percentage terms, the statewide BVAP has steadily increased over the past two decades – from 33.29% in 2000 to 36.14% in 2020. During that same period, the Non-Hispanic (“NH”) White VAP has dropped by nearly seven percentage points, from 64.16% in 2000 to 57.76% in 2020.⁹

⁹ According to the 2021 1-year ACS (the most recent survey available), Any Part Black Mississippians comprise 36.5% of the citizen voting age population, Latinos 2.0%, and NH Whites 58.7%.

Table S2901 -- CITIZEN, VOTING-AGE POPULATION BY SELECTED CHARACTERISTICS (1-year 2021 ACS)

<https://data.census.gov/cedsci/table?q=S2901&g=0400000US28&tid=ACSS1Y2021.S2901>

Public Use Microdata Sample of the 1-Year 2021 ACS

[https://data.census.gov/mdat/#/search?ds=ACSPUMS1Y2021&vv=AGEP\(18:99\)&cv=RACBLK\(1\),CIT\(1,2,3,4\)&rv=ucgid&wt=PWGTP&g=0400000US28](https://data.census.gov/mdat/#/search?ds=ACSPUMS1Y2021&vv=AGEP(18:99)&cv=RACBLK(1),CIT(1,2,3,4)&rv=ucgid&wt=PWGTP&g=0400000US28)

**Figure 2: Mississippi – 2000 to 2020 Census
Percent Voting Age Population by Race and Ethnicity**

	2000	% 2000	2010	% 2010	2020	% 2020
Total	2,069,471	100.00%	2,211,742	100.0%	2,277,599	100.0%
AP Black	688,994	33.29%	773,869	34.99%	823,080	36.14%
NH White	1,327,768	64.16%	1,348,246	60.96%	1,315,451	57.76%

C. Statewide Socioeconomic Disparities (2021 ACS)

24. In Mississippi, African Americans trail NH whites across most key indicators of socioeconomic well-being. This disparity is summarized below and depicted with further detail in the charts in **Exhibit C-1** and the table in **Exhibit C-2**, as reported in *Table S0201* from the 1-Year 2021 ACS conducted by the U.S. Census Bureau (the most current available ACS survey).

(a) Income

- 30.9% of African Americans in Mississippi live in poverty, compared to 11.5% of Whites. (**Exhibit C-1 at p. 2** and **Exhibit C-2 at p. 16**)
- 44.5% of African-American children live in poverty, compared to 12.9% of White children. (**Exhibit C-1 at p. 2** and **Exhibit C-2 at p.16**)
- African-American median household income is \$33,541, compared to the \$61,318 median income for White households. (**Exhibit C-1 at p. 5** and **Exhibit C-2 at p.13**).
- Per capita income disparities in Mississippi track the disparities seen in median household income. African-American per capita income is \$18,368, compared to White per capita income of \$33,374. (**Exhibit C-1 at p. 7** and **Exhibit C-2 at p. 15**)

- 24.6% of African-American households rely on food stamps (SNAP), more than triple the 7.0% SNAP participation rate of White households. (**Exhibit C-1 at p. 8 and Exhibit C-2 at p. 14**)

(b) Education

- Of persons 25 years of age and over, 17.9% of African Americans have not finished high school, compared to 10.1% of their White counterparts. (**Exhibit C-1 at p. 10 and Exhibit C-2 at p. 5**)
- At the other end of the educational scale, for ages 25 and over, 18.2% of African Americans have a bachelor's degree or higher, compared to 28.6% of Whites. (**Exhibit C-1 at p. 10 and Exhibit C-2 at p. 5**)

(c) Employment

- The Black unemployment rate (for the population over 16, expressed as a percent of the civilian labor force) is 10.5%, compared to a 3.9% White unemployment rate. (**Exhibit C-1 at p. 12 and Exhibit C-2 at p. 9**)
- Of employed African Americans, 26.2% are in management or professional occupations, compared to 41.1% rate of Whites. (**Exhibit C-1 at p. 13 and Exhibit C-2 at p. 10**)

(d) Housing

- In Mississippi, a little over half of African-American householders (53.8%) are homeowners, while more than three quarters of White households (80.1%) are owner-occupied. (**Exhibit C-1 at p. 14 and Exhibit C-2 at p. 17**)
- Median home value for African-American homeowners is \$95,800, compared to the \$162,200 median home value for Whites. (**Exhibit C-1 at p. 15 and Exhibit C-2 at p. 19**)

(e) Transportation/Communication

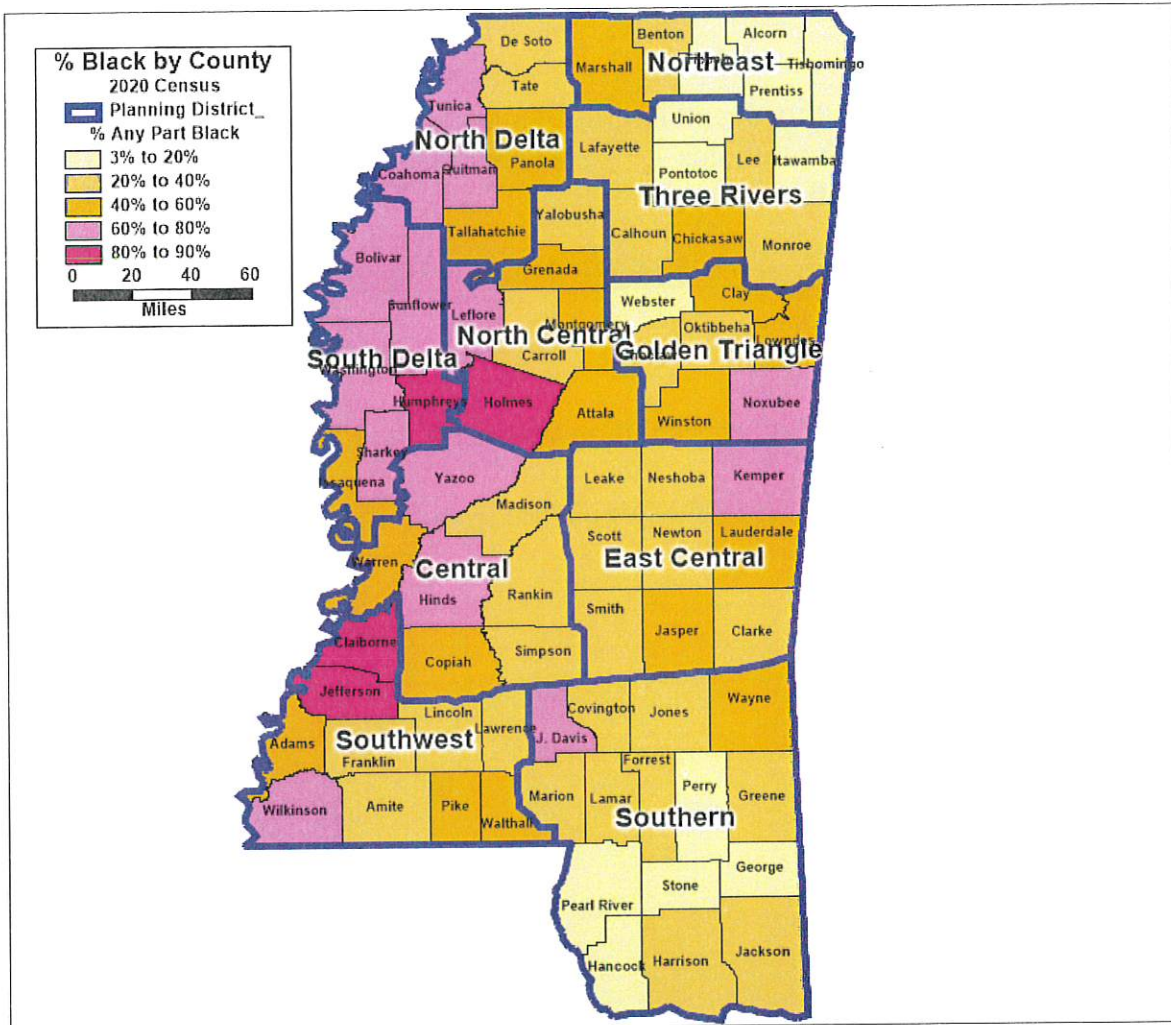
- One in ten African-American households (10.0%) lacks access to a vehicle, while 4.3% of White households are without a vehicle. (**Exhibit C-1 at p. 17 and Exhibit C-2 at p. 19**)

- There is about a four-point Black-White gap in households with a computer, smartphone or tablet – 88.7% versus 93.0%. (**Exhibit C-1 at p. 18** and **Exhibit C-2 at p. 20**)
- With respect to broadband internet connections, African-American households trail White households – 77.1% versus 84.4%. (**Exhibit C-1 at p. 18** and **Exhibit C-2 at p. 20**)

D. Regional Distribution of Mississippi's Black Population

25. The map in **Figure 3** depicts 2020 Black population percentage by county. **Exhibit D-1** is a higher resolution version of the **Figure 3** map. **Exhibit D-2** reports total, Black and NH White population by county for 2000, 2010 and 2020.

Figure 3: 2020 Percent Black by County (Exhibit D-1)
Mississippi Planning & Development Districts (blue lines)



26. Blue lines in the **Figure 3** map identify the state’s ten Planning and Development Districts (“planning districts” or “PDDs”), which are Mississippi’s official sub-state regions and are used to define regional boundaries for various administrative, planning, and development purposes.¹⁰

¹⁰ See, e.g., Miss. Assoc. of Planning and Dev. Districts, *2022 Directory*, <http://mspdds.org/directory/>.

27. Mississippi's planning districts are a useful reference point for constructing electoral districts in the state. In the 1960s, local Mississippi officials created the PDDs as an administrative and governance structure to "allow communities to collectively address problems."¹¹ Since then, "each PDD [has] represent[ed] a distinctly different region of the state," and each district's responsibilities span "community and economic development," "health and social services," "small business assistance," "workforce development," "loan assistance," and Medicaid case management, among other "local needs and priorities."¹² As such, PDD boundaries, by definition, delineate parts of Mississippi that share policy interests and preferences.

28. The table in **Figure 4** reports 2020 population by race and ethnicity for the ten planning district regions, with bold font identifying five planning districts where I have determined that one or more additional majority-Black legislative districts can be drawn.

¹¹ Miss. Assoc. of Planning and Dev. Districts, *What is a PDD*, <http://mspdds.org/what-is-a-pdd/>.

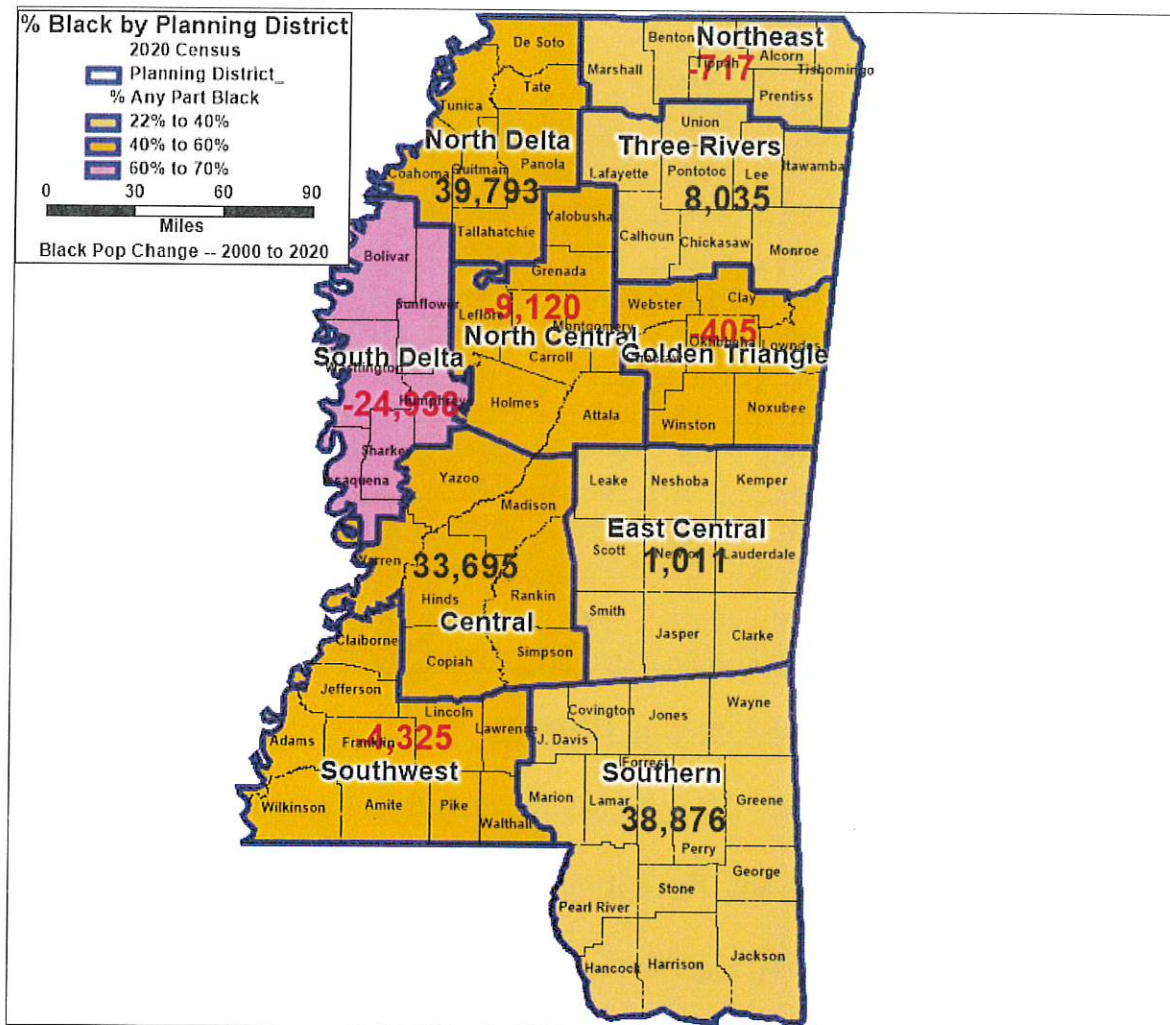
¹² *Id.*

**Figure 4: Mississippi Planning Districts – 2020 Census
Population by Race and Ethnicity**

Planning District (identifying the primary location of additional legislative districts in Illustrative Plans)	Population	AP Black	% AP Black	Latino	% Latino	NH White	% NH White
Central – Senate/House	619,700	297,220	48.0%	17,197	2.8%	288,467	46.5%
East Central – House	227,806	88,263	38.7%	8,496	3.7%	119,855	52.6%
Golden Triangle	175,474	76,701	43.7%	3,447	2.0%	90,528	51.6%
North Central	117,158	65,758	56.1%	2,016	1.7%	47,944	40.9%
North Delta – Senate	296,649	120,419	40.6%	12,631	4.3%	154,476	52.1%
Northeast	141,811	31,216	22.0%	4,993	3.5%	102,531	72.3%
South Delta	114,801	80,599	70.2%	2,319	2.0%	30,680	26.7%
Southern – Senate	805,302	205,707	25.5%	40,696	5.1%	523,916	65.1%
Southwest	176,046	87,802	49.9%	2,860	1.6%	82,779	47.0%
Three Rivers - Senate/House	286,532	69,928	24.4%	10,565	3.7%	197,901	69.1%

29. The map in **Figure 5** illustrates the percentage of Black population by planning district, according to the 2020 Census. Labels indicate Black population change since 2000, as reported in the **Figure 6** table *infra*. **Exhibit D-3** is a higher resolution version of the Figure 5 map.

Figure 5: 2020 Percent Black by Planning District
Labels show Black Population Change Since 2000



30. The **Figure 5** map and table in **Figure 6** below reveal that between 2000 and 2020, Black population growth at the regional level has been concentrated in four planning districts – Central Mississippi, North Delta, Southern Mississippi, and Three Rivers. Taken together, these four planning districts account for a net Black population gain of 120,399 persons since 2000. The 2000 to 2020 White population loss in these same planning districts is -7,636.

**Figure 6: Mississippi Planning Districts—
2000 to 2020 Population Change**

Planning Districts	2000 Pop	2020 Pop	Pop Change (2000-2020)	2000 Black	2020 Black	Black Change (2000-2020)	2000 NH White	2020 NH White	NH White Change (2000-2020)
Central	574,990	619,700	44,710	263,525	297,220	33,695	299,889	288,467	-11,422
East Central	240,785	227,806	-12,979	87,252	88,263	1,011	142,721	119,855	-22,866
Golden Triangle	179,227	175,474	-3,753	77,106	76,701	-405	98,017	90,528	-7,489
North Central	138,489	117,158	-21,331	74,878	65,758	-9,120	61,518	47,944	-13,574
North Delta	231,712	296,649	64,937	80,626	120,419	39,793	145,412	154,476	9,064
Northeast	143,122	141,811	-1,311	31,933	31,216	-717	108,489	102,531	-5,958
South Delta	158,039	114,801	-43,238	105,537	80,599	-24,938	50,146	30,680	-19,466
Southern	727,624	805,302	77,678	166,831	205,707	38,876	532,812	523,916	-8,896
Southwest	188,790	176,046	-12,744	92,127	87,802	-4,325	94,621	82,779	-11,842
Three Rivers	261,880	286,532	24,652	61,893	69,928	8,035	194,283	197,901	3,618
4 PDDs Subtotal	1,796,206	2,008,183	211,977	572,875	693,274	120,399	1,172,396	1,164,760	-7,636
Statewide	2,844,658	2,961,279	116,621	1,041,708	1,123,613	81,905	1,727,908	1,639,077	-88,831

E. Gingles I Focus Planning Districts

31. The 2000 to 2020 Black population growth in Central PDD, North Delta PDD, Southern PDD, and Three Rivers PDD (120,399) equals about two 100% Black Senate districts (ideal Senate district size of 56,948) and about five 100% Black House districts (ideal House district size of 24,273).¹³

32. Assuming geographic proximity of areas with racially diverse populations in these four planning districts, it stands to reason that multiple additional Senate and House districts could be drawn with Black voting age

¹³ Ideal district size is calculated by dividing the 2020 statewide population (2,961,279) by the number of districts – 52 for the Senate and 122 for the House.

populations over 50% while adhering to traditional redistricting principles. In other words, the demographic backdrop makes it highly likely that additional majority-Black legislative districts could be drawn in Mississippi while adhering to traditional redistricting principles. Zero additional Senate or House districts (as in the 2022 Legislative Plan) seems highly unlikely. And yet, in drawing new legislative maps, legislative map drawers chose to maintain the 2000 through 2020-era status quo of 15 majority-Black Senate districts¹⁴ and 42 majority-Black House districts.

33. To determine whether additional majority-Black legislative districts could be drawn based on the 2020 Census while adhering to traditional redistricting principles, I focused on planning districts with substantial Black populations that have experienced double-digit Black population growth since 2000 (*viz.*, Central, North Delta, Southern, Three Rivers), or conversely, areas with stable Black population where there has been a double-digit decline in the White population since 2000 (*e.g.*, East Central). (*See Figure 6 supra.*)

34. The illustrative Senate and House plans that I have developed comply with traditional redistricting principles, including compactness, contiguity, respect

¹⁴ Until 2019, there were just 14 majority-Black Senate districts. I served as the Gingles 1 expert and testified at trial in *Thomas v. Reeves*, No. 18-cv-441 (S.D. Miss. 2019). This Section 2 lawsuit resulted in a late-decade remedial plan (drawn by the State Defendants) that created an additional majority-Black Senate district (SD 22) in the South Delta and Central PDDs.

for communities of interest¹⁵, equal population (one-person, one-vote)¹⁶, and the non-dilution of minority voting strength.

35. The illustrative plans meet the first *Gingles* precondition, *i.e.*, they demonstrate that the Black population in Mississippi is sufficiently numerous and geographically compact to allow for the creation of additional majority-Black legislative districts.

36. There are long-standing Black communities in all five of the focus planning district regions where I have drawn additional majority-Black legislative districts.

¹⁵ In my opinion, the Brennan Center provides a reasonable definition of “community of interest,” which I have endeavored to follow in the development of the plaintiffs’ illustrative plans: “Several redistricting criteria — like following county or municipal lines, or drawing districts that are compact — are in some ways proxies for finding communities of common interest. These are groups of individuals who are likely to have similar legislative concerns, and who might therefore benefit from cohesive representation in the legislature.” According to the Brennan Center, 24 states expressly define “community of interest” for purpose of the redistricting process, but Mississippi does not. *See* Brennan Center, *Communities of Interest*, <https://www.brennancenter.org/sites/default/files/analysis/6%20Communities%20of%20Interest.pdf>.

¹⁶ In the 2022 redistricting cycle, the Mississippi Legislature considered a plus or minus 5% deviation range to be acceptable for legislative district populations. This is consistent with traditional redistricting principles, although a number of state legislatures (*e.g.*, Georgia) use more stringent ranges.

In the redistricting context, “deviation” refers to the difference between the populations of electoral districts. A deviation metric is calculated by summing the absolute value of the most underpopulated district deviation (a negative value representing the percentage by which a district population falls below the ideal size) plus the value of the most overpopulated district deviation (a positive value representing the percentage by which a district population is above the ideal size). The resulting summation is usually referred to as “total deviation.”

37. In sum, by focusing on Mississippi's planning and development districts as regional communities of interest, the illustrative plans I have developed prove superior or equal to the 2022 Legislative Plans across almost every conceivable race-neutral quantitative measure of community of interest (as defined by splits) – including counties, municipalities, school districts, planning districts, and federally defined regional areas known as core-based statistical areas, which include metropolitan statistical areas (“MSAs”) and micropolitan statistical areas (“MPSAs”).¹⁷ A Census Bureau-produced map of Mississippi's core-based statistical areas is in **Exhibit E-1**. For comparison, a state-produced map of the state's planning districts is in **Exhibit E-2**.

F. Regional Socioeconomic Disparities

38. The statewide Black/White socioeconomic disparities referenced in **Section C** *supra* are also present in all five of the *Gingles 1* focus planning districts – and in their component counties and municipalities. For background information

¹⁷ Metropolitan and micropolitan statistical areas are defined by the U.S. Office of Management and Budget and reported in historical and current census data produced by the Census Bureau. Together, MSAs and MPSAs are referred to as “core-based statistical areas.”

MSAs “consist of the county or counties (or equivalent entities) associated with at least one urbanized area of at least 50,000 population, plus adjacent counties having a high degree of social and economic integration with the core as measured through commuting ties.” MPSAs “consist of the county or counties (or equivalent entities) associated with at least one urbanized area of at least 10,000 population, plus adjacent counties having a high degree of social and economic integration with the core as measured through commuting ties.” See U.S. Census Bureau, *Glossary*, <https://www.census.gov/programs-surveys/metro-micro/about/glossary.html>.

that documents these and other sub-state disparities, I have prepared tables and charts from the 5-Year 2015-2019 American Community Survey¹⁸ found on **Exhibit CD** or via: http://www.fairdata2000.com/ACS_2015_19/Mississippi/.

39. Like the 1-Year ACS, the 5-Year ACS is a U.S. Census Bureau survey, reporting socio-economic information by race and ethnicity. However, the 5-year ACS also includes smaller population areas (*e.g.*, municipalities regardless of size).¹⁹

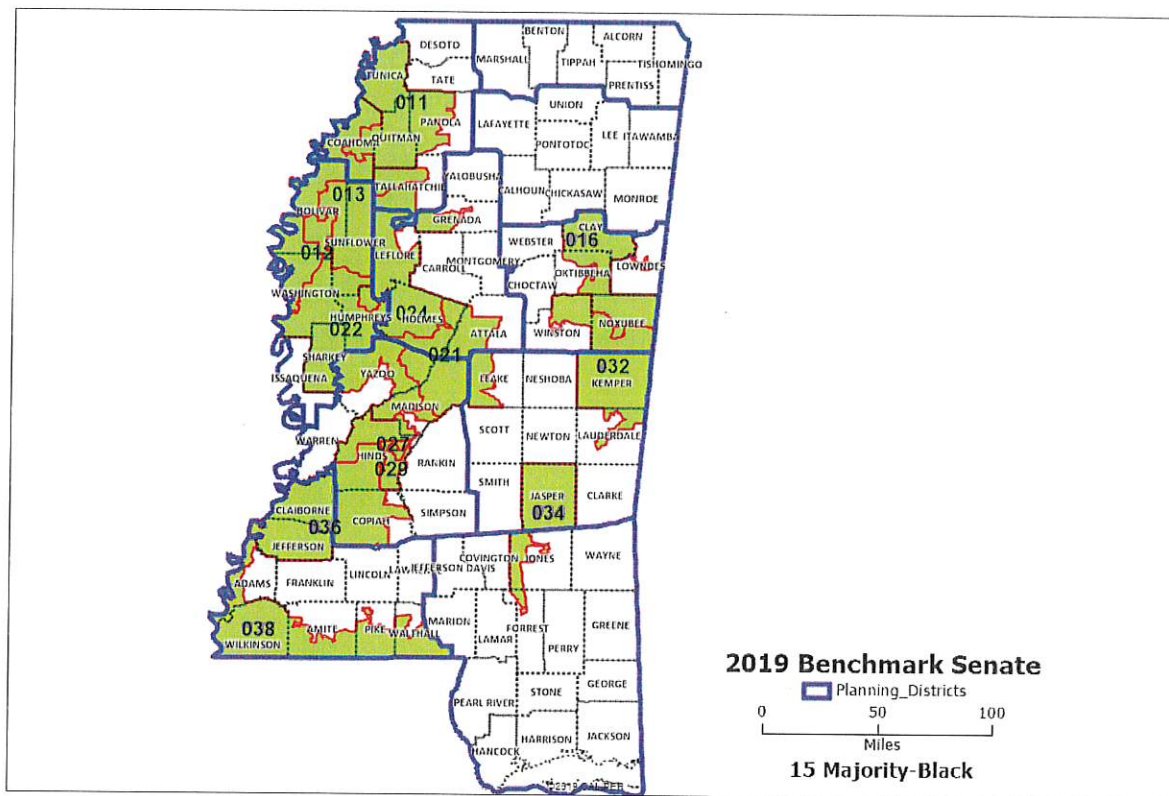
III. STATE SENATE

A. Benchmark 2019 Senate Plan

40. The map in **Figure 7** overlays the 15 majority-Black Senate districts (light green) under the Benchmark 2019 Senate Plan onto a map depicting Mississippi's ten planning districts (blue lines). Red lines demarcate district boundaries. **Exhibit F** is a higher resolution version of the Figure 7 map.

¹⁸ The 2015-2019 ACS is the last 5-year time period in which the socioeconomic data was unaffected by the pandemic. For statistics from the 5-Year ACS, "White" refers to NH White. "Black" or "African American" refers to Single-race Black (including persons who are Black and Hispanic"). The 5-year ACS does not report estimates for the Any Part Black population.

¹⁹ The Census Bureau does not directly report planning district-level statistics in the 5-Year ACS. In Exhibit CD, I summed county-level data up to the PDD-level for the five focus PDDs. County-level data reported by the Census Bureau as median or mean averages, per capita, or in dollar amounts cannot be summed.

Figure 7: Majority-Black Districts in Benchmark 2019 Senate (Exhibit F)

41. **Exhibits G-1 to G-10** (color-coded by district) zoom in on each planning district under the Benchmark 2019 Plan – in alphabetical order from Central Mississippi to Three Rivers.

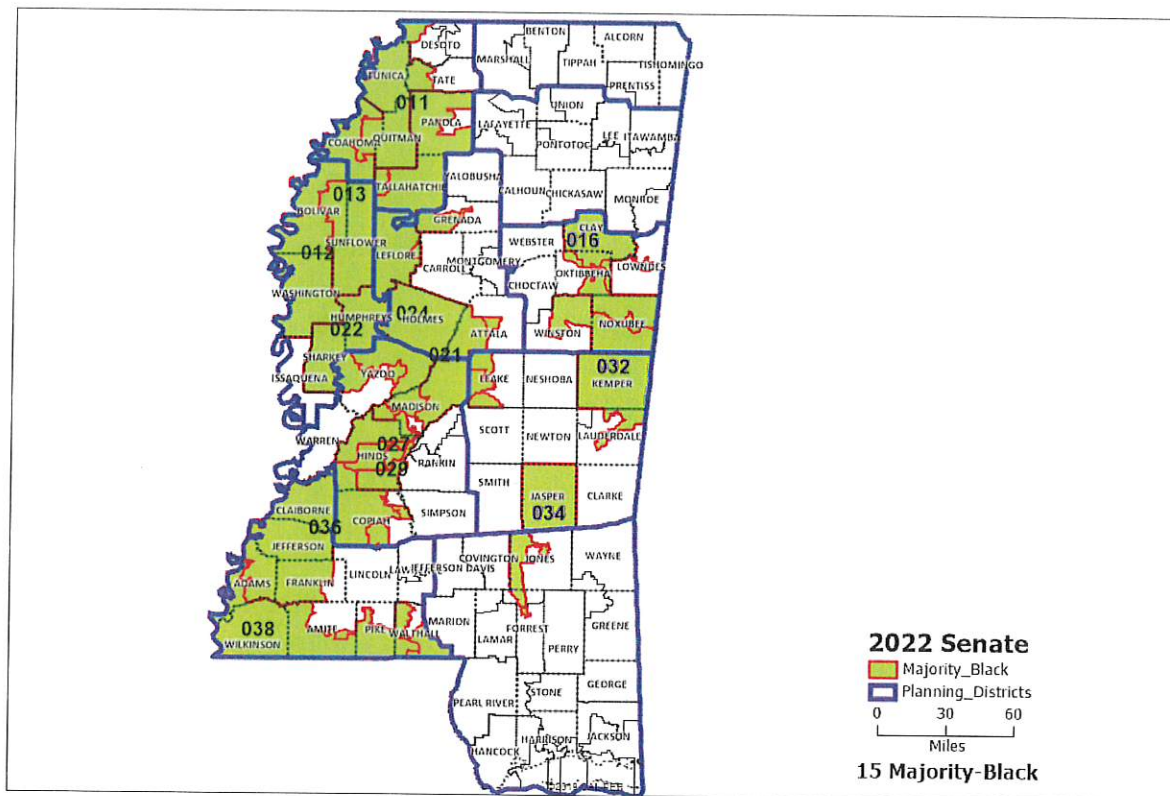
42. **Exhibit G-11** is a table I prepared reporting Census 2020 population statistics for the 52 districts in the 2019 Benchmark Senate Plan. Thirty-four of the 52 Senate Districts in the Benchmark 2019 Plan were outside a + or -5% population deviation range and therefore had to be modified in some fashion (including 12 of the 15 majority-Black districts). Ten of the 15 majority-Black districts in the Benchmark 2019 Plan were underpopulated (SDs 28, 24, 11, 27, 12, 13, 21, 32, 36,

and 16). SD 22, the remedial majority-Black district drawn in 2019 by the State defendants in *Thomas v. Reeves*, was overpopulated by 22.54%. Four districts, SDs 26 and 29 (Hinds County), odd-shaped SD 34 (running from Jasper County through a slice of western Jones County to Hattiesburg), and SD 38 (in the southwest corner of the state) were within the + or -5% range.

43. **Exhibit H-1** is a statewide map of the 2019 Benchmark Senate prepared by MARIS for the Standing Joint Legislative Committee on Reapportionment & Redistricting (“Joint Committee”). **Exhibit H-2** is the accompanying MARIS statistical package containing population summaries by district.

B. Enacted 2022 Senate Plan

44. The map in **Figure 8** overlays the 15 majority-Black Senate districts (light green) under the 2022 Plan onto a map depicting the ten planning districts (blue lines). Red lines demarcate district boundaries. **Exhibit I** is a higher resolution version of the Figure 8 map.

Figure 8: Majority-Black Districts in 2022 Senate (Exhibit I)

45. **Exhibits J-1 to J-10** (color-coded by district) zoom in on each planning district under the 2022 Senate Plan— in alphabetical order from Central Mississippi to Three Rivers. **Exhibit J-11** is a table I prepared reporting Census 2020 population statistics for the 52 districts in the 2022 Senate Plan.

46. **Exhibit K-1** is a statewide map of the 2022 Senate prepared by MARIS for the Joint Committee. **Exhibit K-2** is the accompanying MARIS statistical package containing population summaries by district.

47. To view all counties assigned by district in the 2022 Senate Plan, refer to **Exhibit L-1**. To view the 2022 Senate district core components built from districts in the Benchmark 2019 Senate Plan, refer to **Exhibit L-2** – “Core Constituencies”.

48. An examination of Exhibit L-2 reveals that a core population representing 79.6% of the state’s population was kept together in the redraw from the Benchmark 2019 Plan to the 2022 Senate Plan.²⁰ Boundaries for all of the 52 Benchmark Senate districts are changed under the 2022 Plan.

49. To view all municipalities assigned by district in the 2022 Senate Plan refer to **Exhibit L-3**. To view all school districts assigned by district in the 2022 Senate Plan refer to **Exhibit L-4**. To view all planning districts assigned by district in the 2022 Senate Plan refer to **Exhibit L-5**.

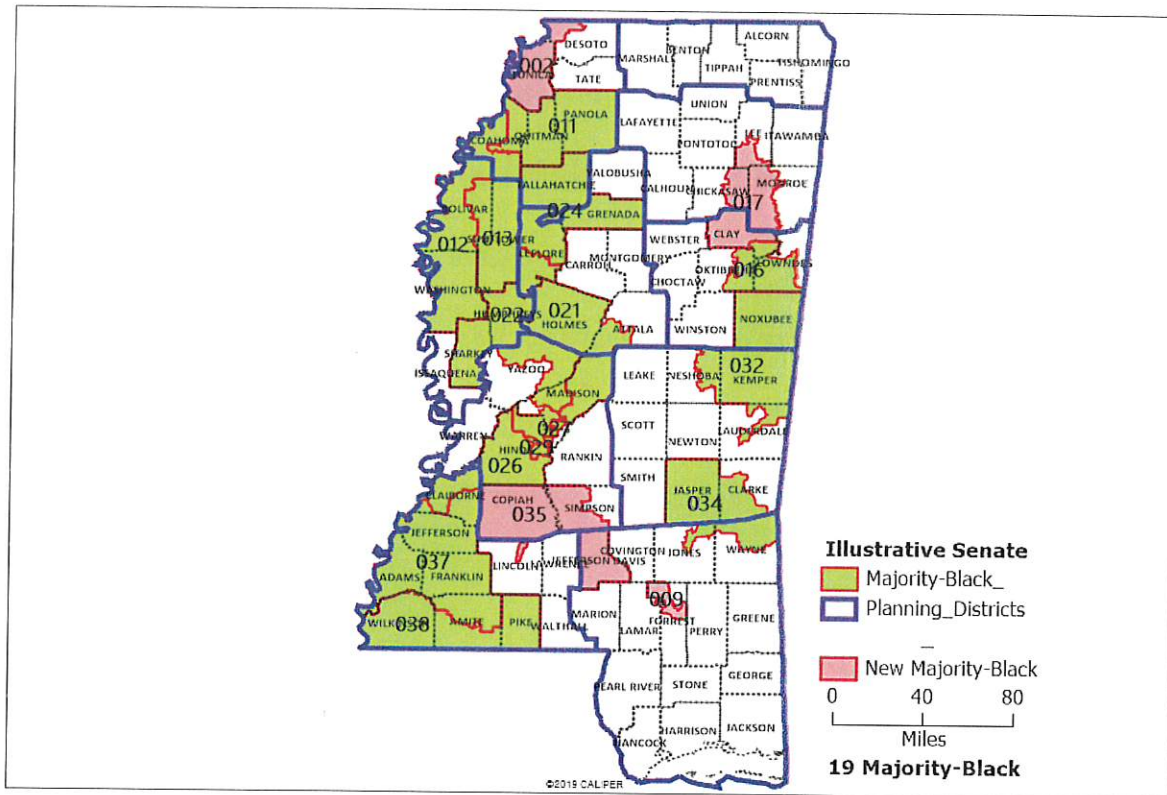
C. Illustrative Senate Plan

50. The Illustrative Senate Plan adds four majority-Black districts anchored in four planning districts: North Delta, Three Rivers, Southern, and Central. The map in **Figure 9** depicts the 19 majority-Black Senate districts (light green) under the Illustrative Senate Plan. Red shading demarcates the regions of the state where I

²⁰ I define “core population” as the largest district-level subset of a population that is kept together in the shift from one plan to another (without considering changes in district numbers or changes in incumbent representation). The core population is identified with shading in the referenced tabular exhibits.

have drawn the four additional majority-Black districts. **Exhibit M** is a higher resolution version of the Figure 9 map.

Figure 9: Majority-Black Districts in Illustrative Senate Plan (Exhibit M)



51. **Exhibits N-1 to N-10** (color-coded by district) zoom in on each of the ten planning districts under the Illustrative Senate Plan – in alphabetical order from Central Mississippi to Three Rivers. **Exhibit N-11** is a table I prepared reporting Census 2020 population statistics for the 52 districts in the Illustrative Senate Plan.

51. The link below is a statewide interactive map depicting the Illustrative Senate Plan color-coded in the same fashion as the **Exhibit N** series. A red-line overlay depicting the 2022 Plan Senate districts can be clicked on and off via the

legend in the top left corner of the map.²¹

<https://online.caliper.com/mas-874-drp-290-ujr/maps/llk7ji5q01164ycw74q8>

52. To view all counties assigned by district in the Illustrative Senate Plan refer to **Exhibit O-1**. To view the Illustrative Senate district core components built from districts in the 2022 Senate refer to **Exhibit O-2** – “Core Constituencies.”

53. All told, boundaries for 41 of the 52 2022 Senate districts are changed under the Illustrative Plan – a seemingly unavoidable outcome given that the additional Senate districts are dispersed across the state. That said, an examination of **Exhibit L-2** documents that a core population representing 75.8% of the state’s population is kept together at the district-level in the redraw from the 2022 Senate Plan to the Illustrative Senate Plan.

54. To view all municipalities assigned by district in the Illustrative Senate Plan refer to **Exhibit O-3**. To view all school districts assigned by district in the 2022 Senate Plan refer to **Exhibit O-4**. To view all planning districts assigned by district in the Illustrative Senate Plan refer to **Exhibit O-5**.

D. Regional Analysis – Illustrative Senate vs. 2022 Senate

52. The section below discusses each additional Senate district within the context of the regions where they are anchored – organized in a clockwise fashion

²¹ For additional population statistics (county and place), click anywhere on the map. Click on the column headings in the sidebar legend to view available population data at the clicked point.

from North Delta PDD in the northwest. The text descriptions of the additional majority-Black Senate districts in the Illustrative Senate Plan set forth below are illustrated with side-by-side comparison maps, depicting the 2022 Senate and the Illustrative Senate at the same scale. For higher resolution maps, these side-by-side pairings are also included in exhibits identified in the map titles.

(a) Illustrative Senate District 2 – North Delta PDD

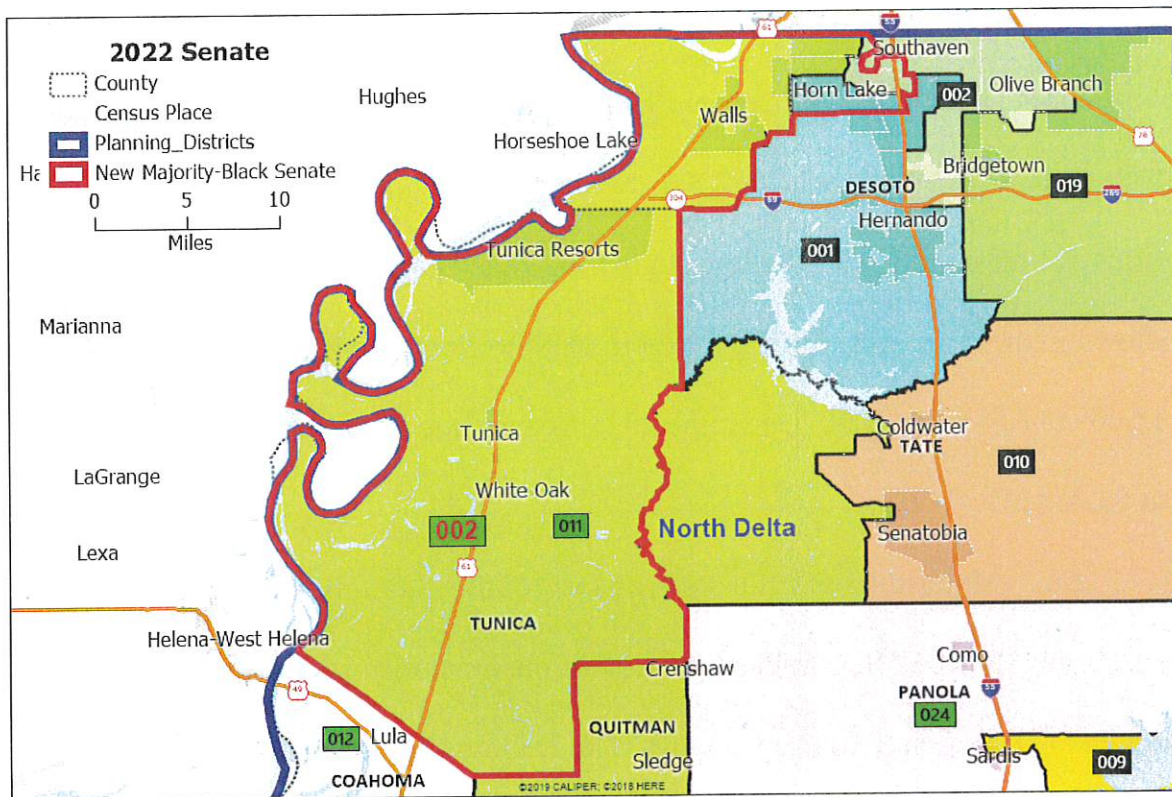
55. The Illustrative Senate Plan adds a majority-Black district in the North Delta PDD²² by modifying 2022 Senate SD 2 to encompass more of DeSoto County – the county with the fastest growing Black population in the state. As shown in the table in **Exhibit D-2** *supra*, DeSoto County had a Black population of 12,409 (11.58%) in 2000. Under the 2020 Census, the Black population has grown to 58,768 (31.71%).

56. Majority-Black Illustrative SD 2 (outlined in red in **Figure 10-A**, overlaying the 2022 Senate Plan) is an additional majority-Black district that can be drawn in DeSoto and Tunica Counties. The DeSoto County changes depicted in **Figure 10-A** may seem modest, affecting only a relatively small geographic area near the Tennessee state line. However, this small urban area is densely populated,

²² The North Delta PDD encompasses the Counties of Coahoma, DeSoto, Panola, Quitman, Tallahatchie, Tate, and Tunica.

with a substantial Black population that is fragmented or “cracked”²³ under the Enacted 2022 Plan into majority-White SD 1 and SD 2, including the municipalities of Horn Lake (pop. 26,736; Black pop. 51.4%) and Southaven (pop. 54,648; Black pop. 35.6%).²⁴

**Figure 10-A: North Delta PDD – DeSoto & Tunica Counties
2022 Senate and Illustrative SD 2 (red lines) – Exhibit P-1**



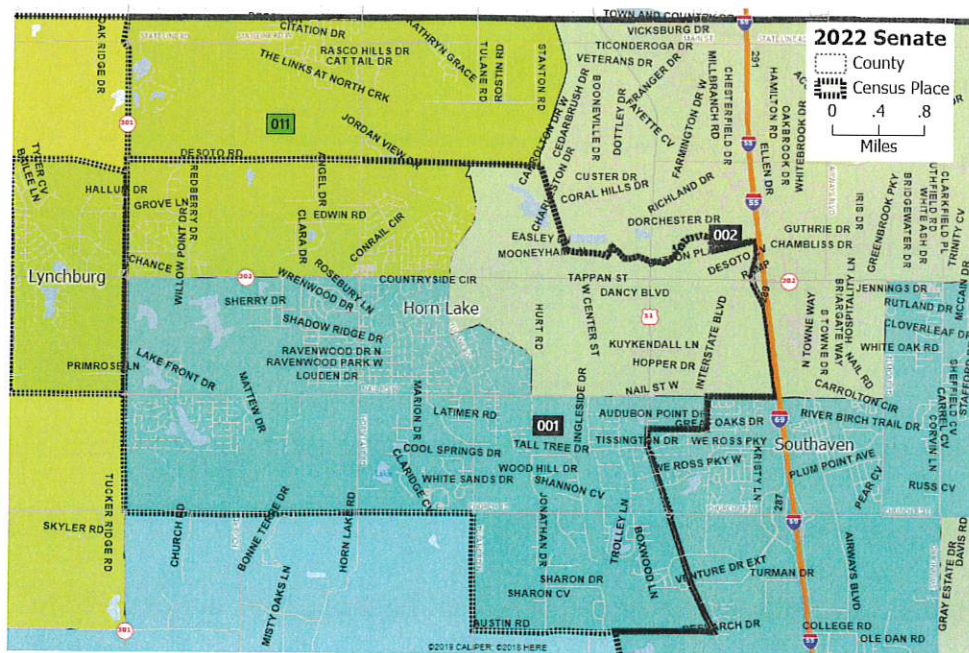
57. Also shown in **Figure 10-A** are parts of the challenged districts in the 2022 Plan that overlap with or are adjacent to Illustrative SD 2 – 2022 Plan SDs 1,

²³ “Cracking” describes election plans with one or more districts that fragment or divide the minority population, resulting in an overall dilution of minority voting strength in the voting plan.

²⁴ References to “pop.” *infra* mean total population (all ages) under the 2020 Census.

2, and 11, which are configured in a fashion that splits the densely populated areas of Horn Lake and Southaven across three different districts, diluting the voting strength of the large and concentrated Black populations in those areas. Shown in **Figure 10-B** below is a detailed view of three-way division of the densely-populated, majority-Black municipality of Horn Lake.

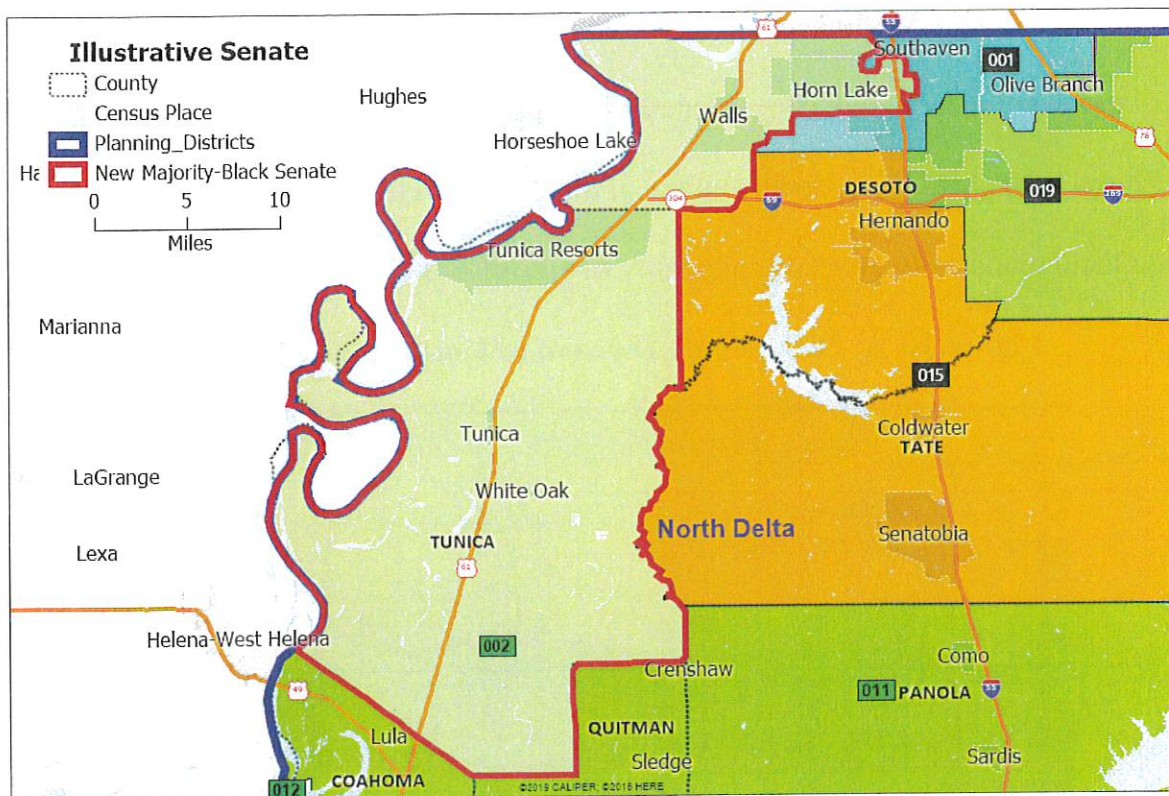
Figure 10-B: 2022 Senate Division of Horn Lake – Exhibit P-2



58. For PDD-level map comparisons, *see* **Exhibits J-5** (2022 Plan) and **N-5** (Illustrative Plan).

59. **Figure 10-C** depicts the Illustrative Plan with Illustrative SD 2 (outlined in red). With the addition of almost all of Horn Lake and the west end of Southaven, majority-Black Illustrative SD 2 consists of just two counties – all of Tunica and the western part of DeSoto.

**Figure 10-C: North Delta PDD – DeSoto & Tunica Counties
Illustrative Senate and Illustrative SD 2 (red lines) – Exhibit P-3**



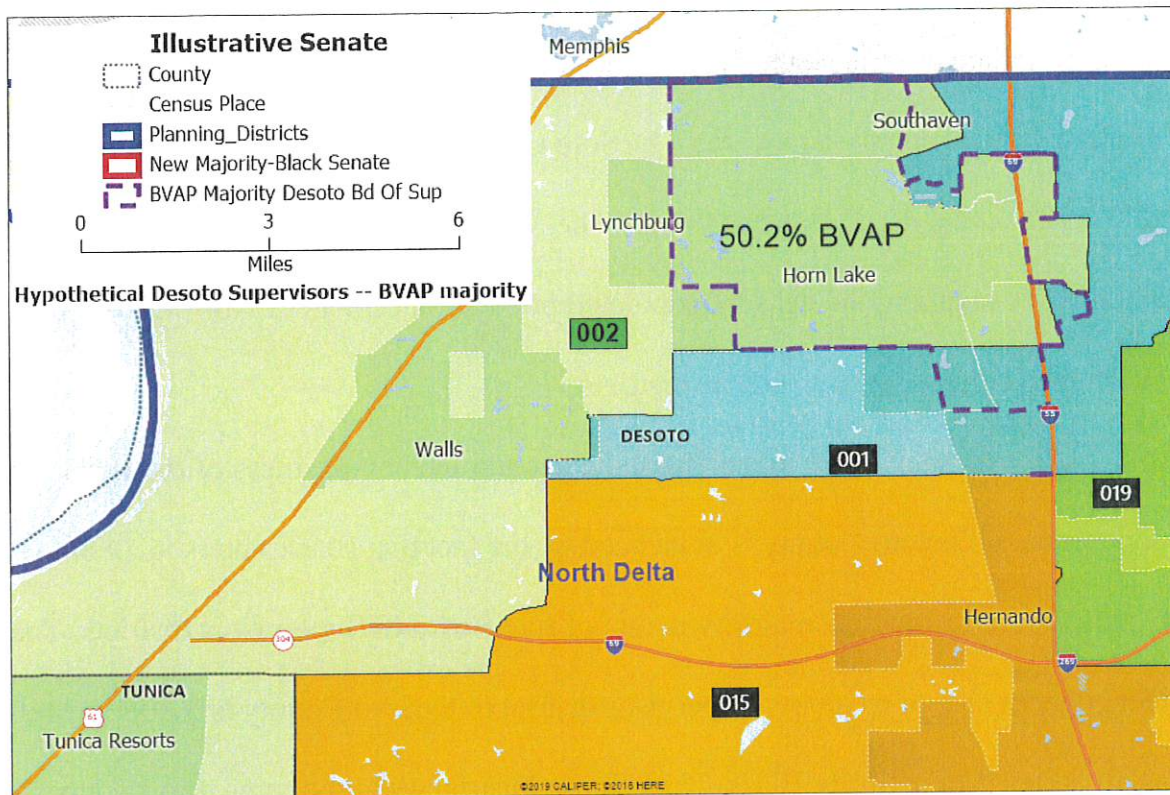
60. In the process of the Illustrative Plan redraw, majority-Black SD 11 to the south becomes more compact. Moreover, the splits of Tate and Panola Counties (found in the 2022 Plan) are eliminated so that both counties are entirely in Illustrative SDs 15 and 11, respectively. These splits appear to have been a consequence of the 2022 Plan's three-way split of the Horn Lake and Southaven area, requiring map drawers to extend into and split those counties.

61. There should be no question that the Black community in northern DeSoto County lives in a geographically compact area that is a natural fit with Tunica County. In recent years, majority-Black Tunica County (pop. 9,782; Black

pop. 74.8%) has become more urbanized around Tunica Resorts, differentiating itself from much of the rest of rural North Delta. Historic U.S. Highway 61 runs through Tunica County and western DeSoto County via the Town of Walls (pop. 1,351; Black pop. 61.3%) to Memphis. The 2022 Plan also connects these areas, albeit while cracking the densely populated population centers of Horn Lake and Southaven between three separate districts.

62. As shown in **Figure 10-D**, the geographic compactness of the Black population in DeSoto County is evidenced by the fact that Black voters in DeSoto County could comprise a majority in one of five Board of Supervisors districts. The ideal district size of a County Supervisor district in DeSoto County is 37,062 – half again larger than majority Black-2022 House District 40 in the same general area.²⁵ The hypothetical 50.2% BVAP Board of Supervisors district, shown in **Figure 10-D** with dashed lines, encompasses majority-Black 2022 HD 40 (53.8% BVAP) and part of four adjacent VTDs, and is anchored in Horn Lake.

²⁵ During the 2022 redistricting process for the five-district DeSoto County Board of Supervisors, the Board failed to create a majority-Black district even though one could have been drawn in the Horn Lake/Southaven area. See Mark Randall, *DeSoto County adopts new electoral maps*, DeSoto Times (June 6, 2022), http://www.desototimes.com/news/desoto-county-adopts-new-electoral-maps/article_64e622e6-e5e6-11ec-be15-2b7f00f4bceb.html.

Figure 10-D: Hypothetical Majority-Black DeSoto Bd. of Supervisors District

63. In sum, the Illustrative Senate Plan brings Black voters in DeSoto County into a new majority SD 2 – improving the compactness of neighboring 2022 SD 11, uniting multiple split counties, and uncracking the dilutive effects of SDs 1 and 2.

(b) Illustrative Senate District 17 – Three Rivers PDD

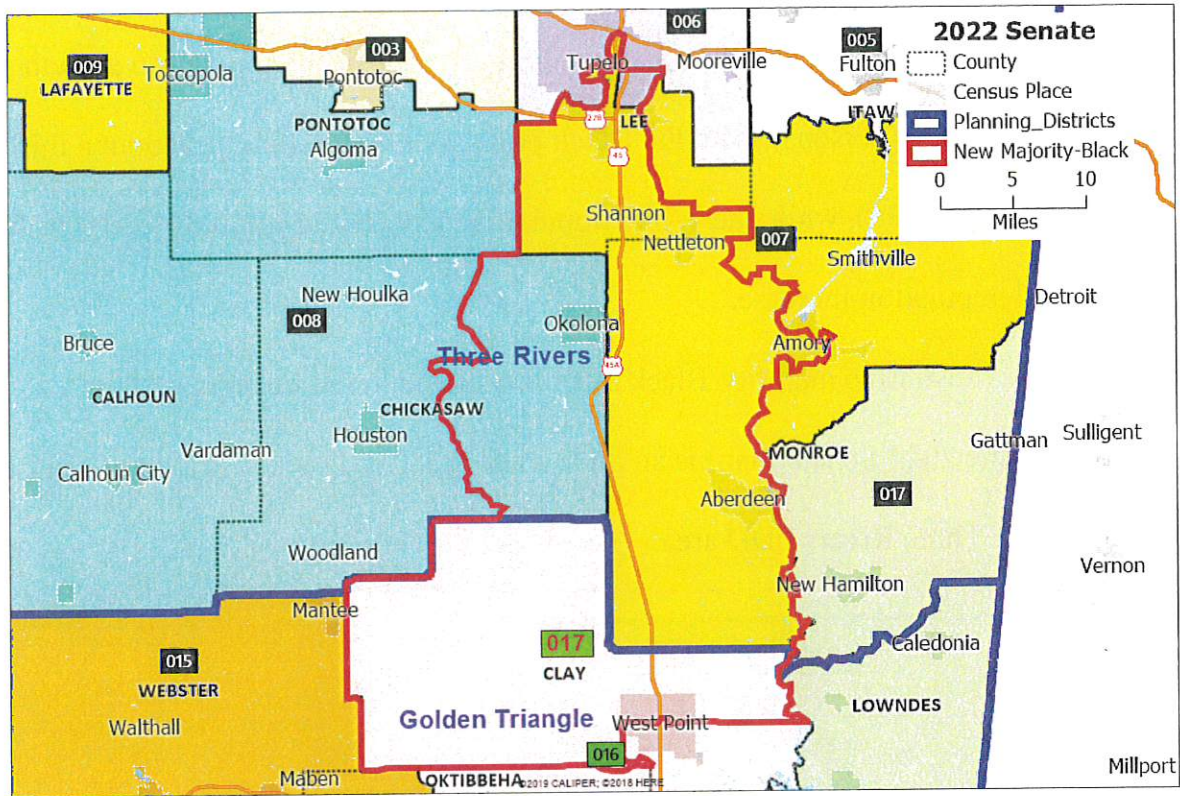
64. In the modern era, no part of Three Rivers PDD has contained even a sliver of a majority-Black Senate district. According to the 2020 Census, Three Rivers PDD has a population of 286,532 (equivalent to about five Senate districts),

with a Black population of 69,928 (24.4 %) which is more than enough population to comprise 100% of a single Senate district.

65. The Three Rivers PDD has experienced significant population growth since 2000 (24,652 persons), with the Black population accounting for about a third of that growth (8,035), while the White population contributed just 3,618 persons to the overall population increase.

66. Illustrative majority-Black SD 17 (outlined in red in **Figure 11-A**, overlaying the 2022 Senate Plan) is an additional majority-Black district that can be drawn in the Three Rivers PDD area.

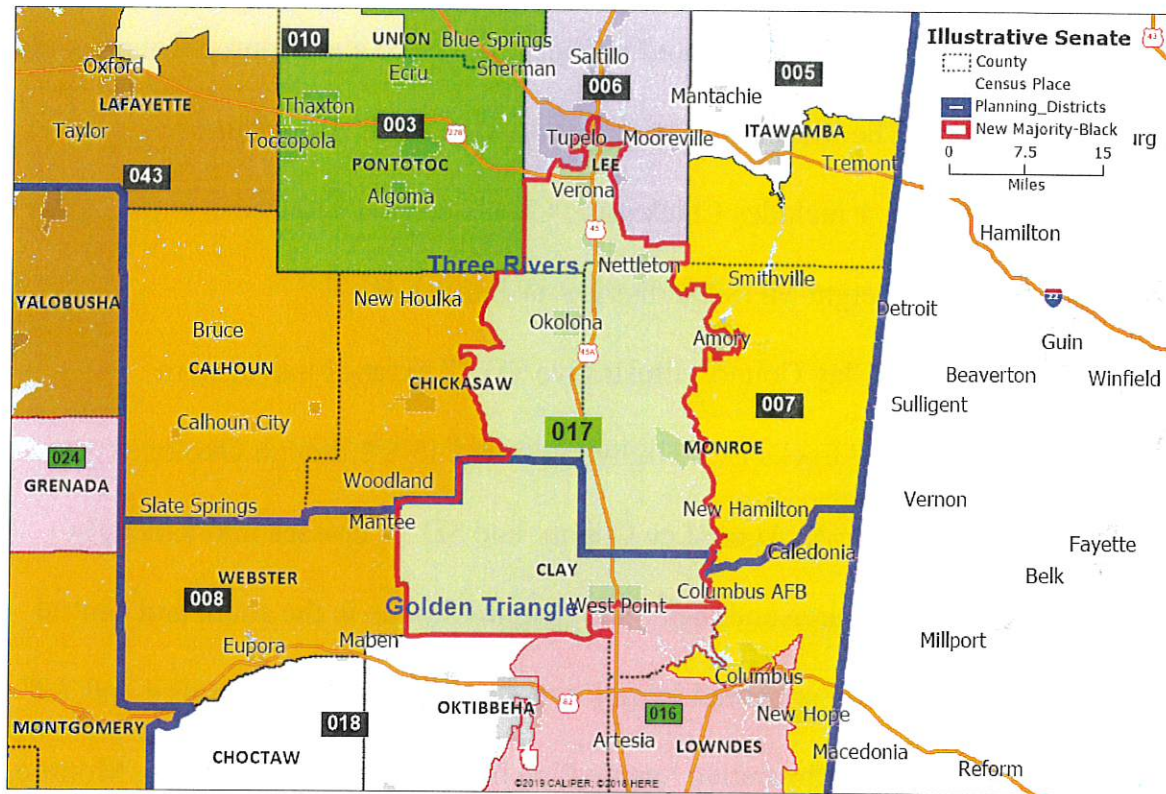
**Figure 11-A: Three Rivers PDD – Counties of Chickasaw, Lee & Monroe
(plus Clay County)
2022 Senate and Illustrative SD 17 (red lines) – Exhibit Q-1**



67. **Figure 11-B** depicts the Illustrative Plan (with SD 17 outlined in red).

For PDD-level map comparisons, see **Exhibits J-10** (2022 Plan) and **N-10** (Illustrative Plan).

**Figure 11-B: Three Rivers PDD – Lee & Monroe Counties (plus Clay County)
Illustrative Senate and Illustrative SD 17 (red lines) – Exhibit Q-2**



68. To be sure, Clay County is part of the Golden Triangle PDD, but it is also part of the Mississippi Black Belt/Prairie²⁶ which runs north in a crescent shape to include Monroe County. As shown in the **Figure 11-B** map, three municipalities in Clay and Monroe Counties form the eastern boundary of Illustrative SD 17 (tracking the Tombigbee River) – West Point (pop. 10,105; Black

²⁶ “The Mississippi Black Belt/Prairie, however, consists of parts of six counties (Chickasaw, Clay, Lowndes, Monroe, Noxubee, and Oktibbeha) along the state’s eastern boundary with Alabama, linked geologically and in many ways culturally to the larger Alabama Black Belt/Prairie that runs through central and eastern Alabama”.

Source: Encyclopedia of Mississippi, *Black Belt/Prairie*, <https://mississippiencyclopedia.org/entries/black-belt-prairie/>.

pop. 63.4%) in Clay County, and Aberdeen (pop. 4,961; Black pop. 72.6%) and Amory (pop. 6,666; Black pop. 27.8%) in Monroe County.

69. Clay County is also linked to Chickasaw, Lee and Monroe Counties via high school sports. The Mississippi High School Activities Association (“MHSAA”) District 1 includes Chickasaw, Clay, Lee, and Monroe Counties. (See statewide map of the eight MHSAA districts in **Exhibit R**).²⁷

70. North of Clay County, Illustrative SD 17 extends into eastern Chickasaw County and tracks U.S. Highway 45 and 45A²⁸ through Okolona (pop. 2,513; Black pop. 78.7%). At the Lee County line SD 17 crosses into a racially diverse unincorporated area and then on to neighborhoods in the south and central part of Tupelo which are anchored in majority-Black city council Wards 4 and 7.²⁹

71. In sum, the Illustrative Senate Plan brings Black voters in Lee, Monroe, and Chickasaw Counties into a compact new majority-Black SD 17.

(c) Illustrative SD 9 – Southern PDD

72. The Southern PDD is the most populous of the ten planning districts, with a 2020 population of 805,302 (25.5% Black). Under the 2022 Plan, there is not

²⁷ See also MHSAA, *Activity Districts*, <https://www.misshsaa.com/2022/09/01/1630/>.

²⁸ West Point and Tupelo are joined by U.S. Highway 45, which is about a 45-minute drive from one downtown area to the other.

²⁹ In 2006, I testified at trial as the *Gingles I* expert on behalf of the plaintiffs in a Section 2 lawsuit that resulted in the second majority-Black ward in Tupelo. See *Jamison v. Tupelo, Mississippi*, 471 F. Supp. 2d 706 (N.D. Miss. 2007).

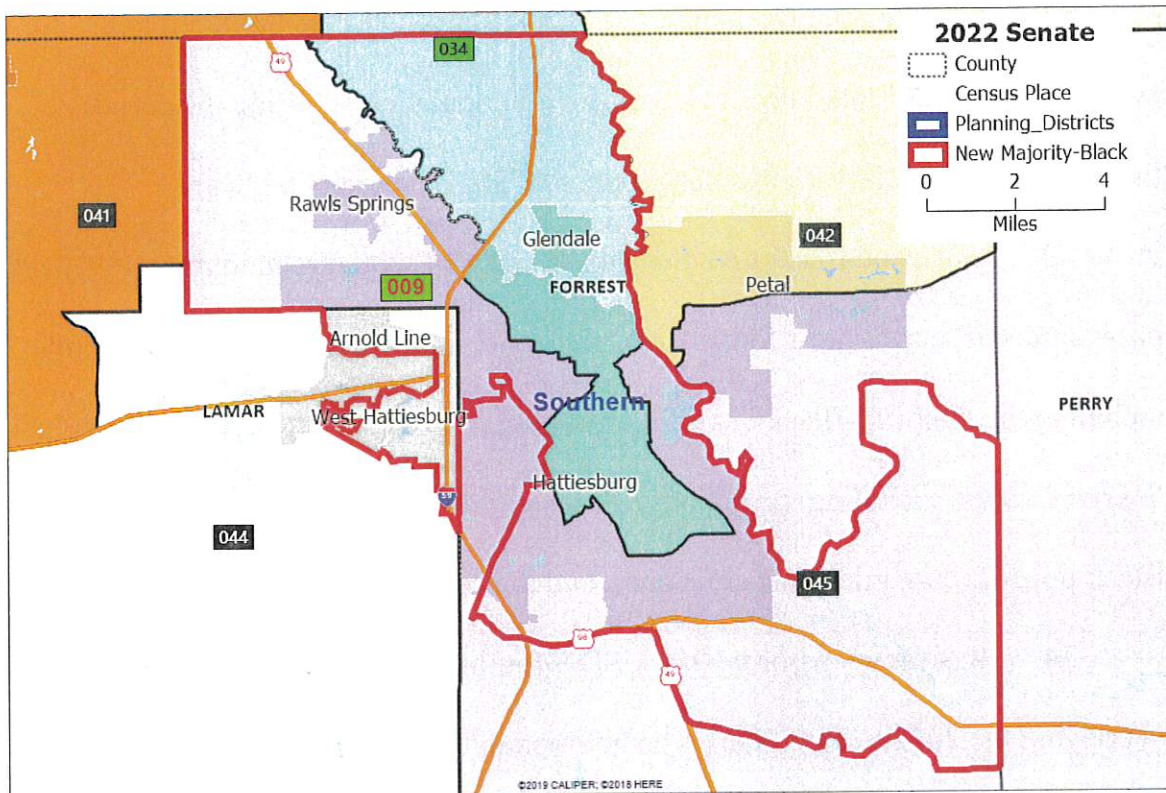
a single majority-Black Senate district entirely within the Southern PDD.³⁰ Just 43% of the Black population in majority-Black SD 34 is in the Southern PDD. An even smaller part of that Forrest County-based population is within the corporate limits of majority-Black Hattiesburg (pop. 48,730; Black pop. 52.8%).

73. Under the Illustrative Senate Plan, SD 34 would remain majority-Black but would shift north into a four-county area, encompassing part of Jones County, including the majority-Black city of Laurel (pop. 17,161; Black pop. 64%), part of Wayne County, including the majority-Black city of Waynesboro (pop. 4,567, Black pop. 65.1%), all of Jasper County, and the southern part of Clarke County.

74. Illustrative majority-Black SD 9 (outlined in red in **Figure 12-A**), overlaying the 2022 Senate Plan) is an additional majority-Black district, anchored in Hattiesburg, that can be drawn entirely in the Southern PPD. Like Hattiesburg, Illustrative SD 9 lies within in two counties – Forrest and Lamar.

³⁰ The northern tier of the 14-county Southern PDD (south to north) encompasses the Counties of Marion, Lamar, Forrest, Perry, Greene, Wayne, Jones, Covington, and Jefferson Davis. These nine counties comprise Mississippi's Pine Belt ecoregion. *See* [https://en.wikipedia.org/wiki/Pine_Belt_\(Mississippi\)](https://en.wikipedia.org/wiki/Pine_Belt_(Mississippi)).

**Figure 12-A: Southern PDD – Forrest & Lamar Counties
2022 Senate and Illustrative SD 9 (red lines) – Exhibit S-1**

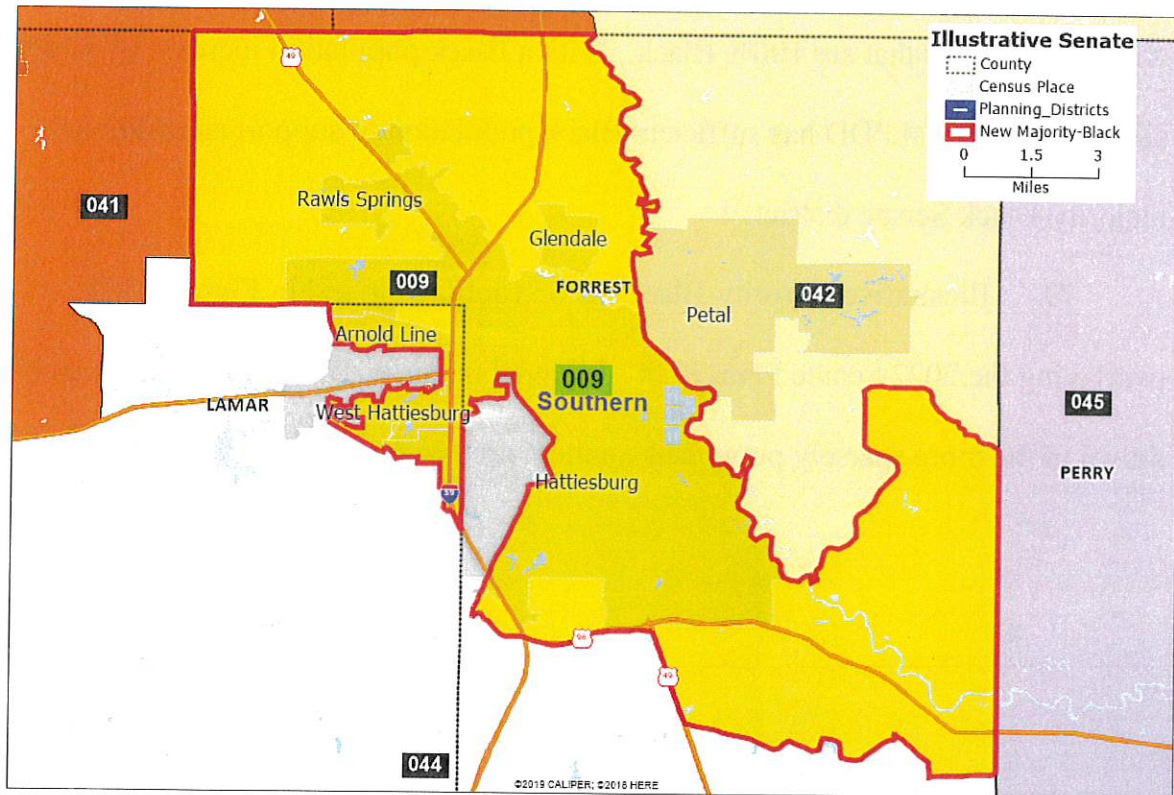


75. Illustrative SD 9 encompasses a very compact, urbanized area. This is in sharp contrast to misshapen 2022 Plan SD 34 that stretches 65 miles from the south end of Hattiesburg through part of the City of Laurel and on to Jasper and Quitman Counties in the East Central PDD.

76. **Figure 12-B** depicts the Illustrative Plan (with SD 9 outlined in red). About 84% of the population in Illustrative SD 9 is contributed by majority-Black Hattiesburg (in Lamar and Forrest Counties), which is divided among three Senate

Districts as opposed to four under the 2022 Plan. For PDD-level map comparisons, see Exhibits J-8 (2022 Plan) and N-8 (Illustrative Plan).

**Figure 12-B: Southern PDD – Forrest & Lamar Counties
Illustrative Senate and Illustrative SD 9 (red lines) – Exhibit S-2**



77. In sum, the Illustrative Senate Plans brings Black voters in the Southern PDD who had previously been divided into SDs 33, 42, 43, 44 and 45 under the Enacted Plan into a compact new majority-Black Senate District 9 anchored in

Hattiesburg.

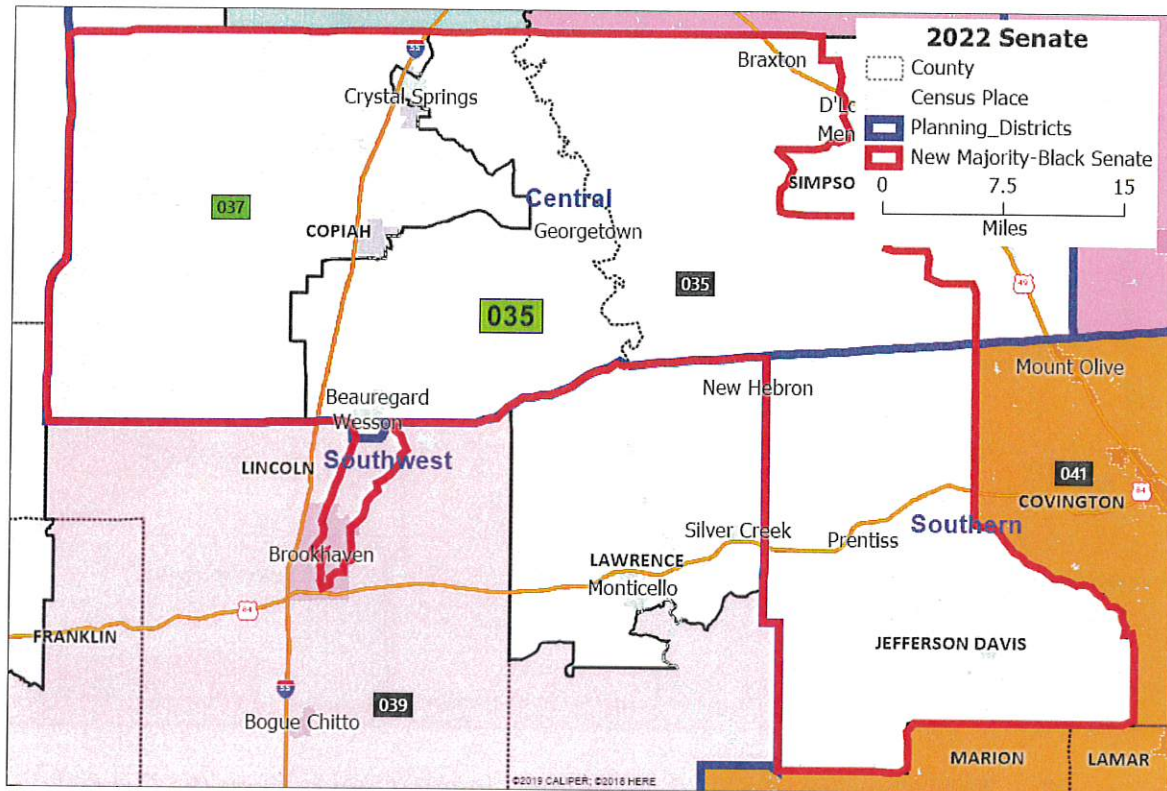
(d) Illustrative SD 35 – Central PDD

78. Central PDD is the second most populous planning district in the state, with a population of 619,700 (48% Black) as of 2020 – sufficient population for about 5.5 districts that are 100% Black. With a Black population increase of 33,695 since 2000, Central PDD has sufficient Black population to support an additional majority-Black Senate district.³¹

79. Illustrative majority-Black SD 35 (outlined in red in **Figure 13-A**, overlaying the 2022 Senate Plan) is an additional majority-Black district that can be drawn in the more sparsely populated southern area of the Central PDD.

³¹ Central PDD encompasses (south to north) the Counties of Copeiah, Simpson, Hinds, Rankin, Warren, Yazoo, and Madison.

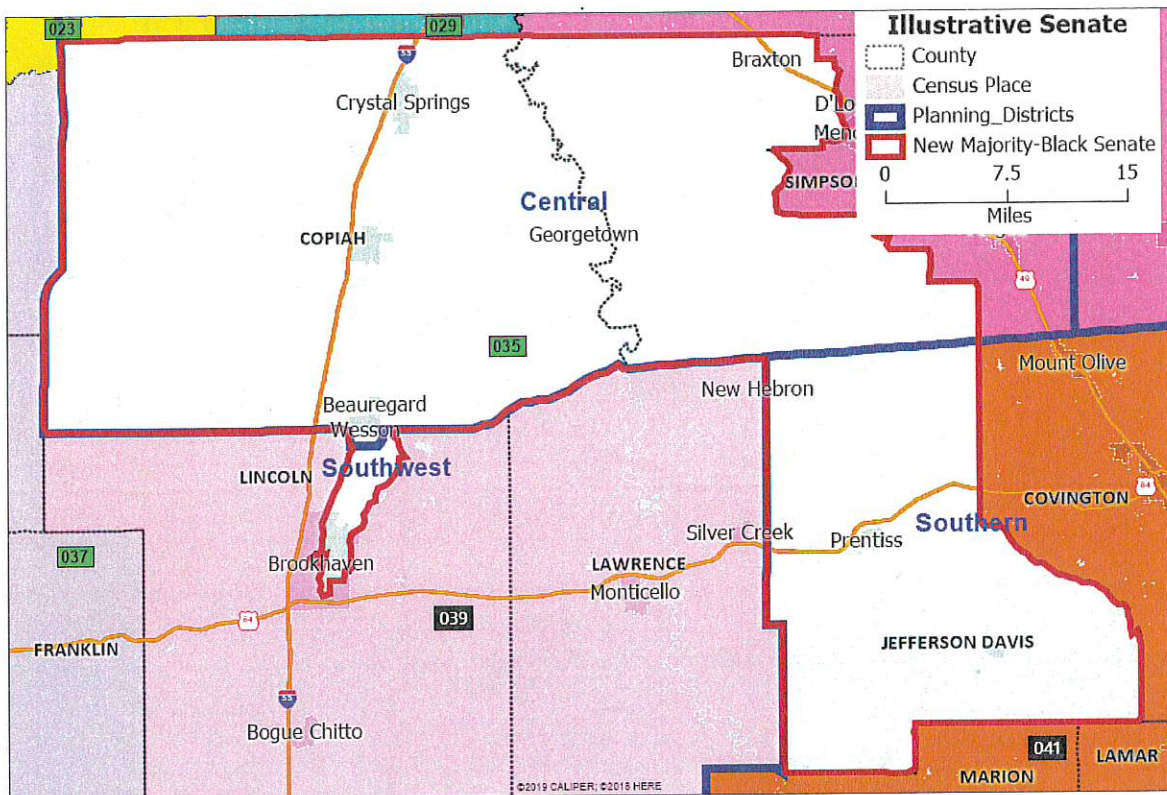
**Figure 13-A: Central PDD – Copiah & Simpson Counties
(plus Jefferson Davis County and part of Lincoln County)
2022 Senate and Illustrative SD 35 (red lines) – Exhibit T-1**



80. Under the Illustrative Senate Plan, SD 35 is along the southern border of Central PDD – including all of Copiah County and part of Simpson County, as well as part of neighboring Lincoln County (Southwest PDD) around Brookhaven and all of Jefferson Davis County (Southern PDD).

81. **Figure 13-B** depicts the Illustrative Plan with SD 35 outlined in red. For PDD-level map comparisons, *see Exhibits J-1* (2022) and *N-1* (Illustrative).

**Figure 13-B: Central PDD – Copiah and Simpson Counties
Illustrative Senate and Illustrative SD 35 (red lines) – Exhibit T-2**



82. The extension of SD 35 south into Lincoln County from the Central PDD into Southwest PDD follows U.S. Highway 51, linking the majority-White town of Wesson (pop. 1,833; Black pop. 21.3%) in Copiah County with part of majority-Black Brookhaven (pop. 11,674; Black pop. 58.9%).

83. Copiah County, Lincoln County, and Jefferson Davis County are part of District 7 of the Mississippi High School Activities Association. Simpson County is in MHSAA District 6, along with the remainder of the Central PDD counties. (As noted *supra*, a map of the eight MHSAA districts is in **Exhibit R**).

84. In sum, the Illustrative Senate Plan brings Black voters along the southern border of Central PDD into new majority-Black SD 35.

E. Senate Plan Metrics – 2022 Plan vs. Illustrative Plan

(a) Compactness Scores

85. The districts in the Illustrative Senate Plan are reasonably shaped and compact. **Exhibit U-1** reports district-by-district compactness scores generated by Maptitude for the 2022 Senate. Compactness scores for the Illustrative Senate are in **Exhibit U-2**. Each exhibit reports three compactness scores: Reock, Polsby-Popper, and Area/Convex Hull.³² Higher scores indicate higher compactness.

86. The table in **Figure 14** summarizes compactness measures based on the Reock, Polsby-Popper (the two most commonly referenced tests) and the Area/Convex Hull for the 2022 Senate, alongside scores for the Illustrative Plan.

³² “The Reock test is an area-based measure that compares each district to a circle, which is considered to be the most compact shape possible. For each district, the Reock test computes the ratio of the area of the district to the area of the minimum enclosing circle for the district. The measure is always between 0 and 1, with 1 being the most compact. The Reock test computes one number for each district and the minimum, maximum, mean and standard deviation for the plan.” *Maptitude For Redistricting* software documentation (authored by the Caliper Corporation).

The Polsby-Popper test computes the ratio of the district area to the area of a circle with the same perimeter: $4\pi \text{Area} / (\text{Perimeter}^2)$. The measure is always between 0 and 1, with 1 being the most compact. The Polsby-Popper test computes one number for each district and the minimum, maximum, mean and standard deviation for the plan. *Id.*

The Area/Convex Hull test computes the ratio the district area to the area of the convex hull of the district (minimum convex polygon which completely contains the district). The measure is always between 0 and 1, with 1 being the most compact. The Minimum Convex Polygon test computes one number for each district and the minimum, maximum, mean and standard deviation for the plan. *Id.*

Figure 14: Compactness Scores – 2022 Senate vs. Illustrative Senate Plan

	Reock#			Polsby-Popper#			Area/Convex Hull#	
	Mean	Low		Mean	Low		Mean	Low
2022 Senate								
All Districts	.40	.20		.26	.08		.72	.54
15 Majority-Black Districts	.33	.20		.19	.09		.66	.56
Illustrative Senate								
All Districts	.41	.17		.28	.08		.73	.57
19 Majority-Black Districts	.39	.21		.22	.10		.70	.57

Higher is better (*i.e.*, more compact).

87. As shown in **Figure 14**, the Illustrative Plan scores higher on the Reock, Polsby-Popper and Convex Hull measures, with higher mean scores.

88. Also reported in **Figure 14** are comparison scores for the majority-Black districts in the 2022 Senate (**Exhibit U-3**) and the majority Black districts in the Illustrative Plan (**Exhibit U-4**). The 19 majority-Black districts as drawn in the Illustrative Plan yield across-the-board higher mean and minimum scores than the 15-district majority-Black subset under the 2022 Plan.

(b) Political Subdivision Splits

89. The table in **Figure 15** compares district splits by county and 2020 VTD for the 2022 Senate (**Exhibit V-1**) and the Illustrative Senate Plan (**Exhibit V-2**). Municipal split counts are in **Exhibit V-3** for the 2022 Plan and **Exhibit V-4** for the Illustrative Plan.

Figure 15: Political Subdivision Splits (excluding unpopulated areas)

	Split Counties *	Total County Splits*	2020 VTD Splits*	Municipalities Not Split #	Total Municipal Splits*
2022 Senate	43	58	41	244	128
Illustrative Senate	34	52	38	253	110

* Lower is better (*i.e.*, fewer splits); # Higher is better (*i.e.*, more unsplit jurisdictions)

90. As **Figure 15** reveals, the Illustrative Senate is superior to the 2022 Senate in terms of county splits and municipal splits. The Illustrative Senate splits 34 of the 82 counties in the state, with a total of 52 county splits (unique county-district combinations). The 2022 Senate splits 43 counties, with a total of 58 populated county splits.

91. The Illustrative Senate splits populated areas in 38 VTDs (of 1,834 VTDs), compared to 41 populated splits under the 2022 Senate.³³

92. The Illustrative Senate keeps 253 municipalities whole, with 110 populated splits. The 2022 Senate keeps 244 municipalities whole, with 128 populated splits.

³³ A populated split divides population in a VTD or municipality into two or more districts. Generally, unpopulated splits involve splits due to bodies of waters or municipal boundaries. Precinct boundaries are in a constant state of flux in Mississippi.

It is common for precinct boundaries to be changed in Mississippi and most other states. In the 2020 PL-94-171 file there are 1,834 VTDs, compared to 1,969 VTDs in the 2010 PL-94-171 file.

93. In sum, the Illustrative Senate scores better than the 2022 Plan on county, VTD, and municipal splits.

(c) School District Splits

94. The Legislature is a primary source of funds for Mississippi's public schools. Not surprisingly, split school districts can be an issue for voters. For school year 2022-2023, minorities comprise the majority of students enrolled in public schools – White students comprised 42.59% of those enrolled and Black students 46.99%.³⁴

95. The table in **Figure 16** compares district splits by school district for the 2022 Senate and the Illustrative Senate.³⁵ Split school districts are identified in **Exhibit W-1** for the 2022 Plan and **Exhibit W-2** for the Illustrative Plan.

Figure 16: School District Splits (excluding unpopulated areas)

	School Districts Not Split #	School District Splits*	Majority-Black School District Splits*
2022 Senate	59	181	56
Illustrative Senate	74	151	38

* Lower is better (*i.e.*, fewer splits); # Higher is better (*i.e.*, more unsplit jurisdictions)

³⁴ See Mississippi Department of Education, *Data Explorer*, <https://mdereports.mdek12.org/DataExplorer>.

³⁵ The 2020 Census reports that there are 138 unified school districts in Mississippi.

96. As **Figure 16** reveals, the Illustrative Senate contains more whole school districts – 74 vs. 59 – with fewer school district splits (unique school district/legislative district combinations)– 151 vs. 181– and, as detailed in **Exhibits W-3 and W-4** – fewer majority-Black school district splits (41 vs. 56).³⁶

(d) Regional Splits

97. Like state-defined planning districts, federally defined core-based statistical areas define regional communities of interest with implications for highway funding, education, etc.

98. As **Figure 17** reveals, the Illustrative Plan is superior to the 2022 House in terms of state-defined planning and development district splits and federally defined MSA splits. Compared to the 2022 Senate Plan, the Illustrative Senate Plan contains fewer planning district splits (74 vs. 76) and fewer MSA splits (31 vs. 33). However, the 2022 Senate has one less MPSA split (28 vs. 29).

Figure 17: PDD Splits, MSA Splits, MPSA splits

	Planning District Splits *	MSA Splits *	MPSA Splits*
2022 Senate	76	33	28
Illustrative Senate	74	31	29

* Lower is better (*i.e.*, fewer splits); # Higher is better (*i.e.*, more unsplit jurisdictions)

³⁶ Majority-Black districts in Figure 17 are based on population rather than school enrollment figures, which are not available from the 2020 Census or its component geography.

99. Planning district split details are in **Exhibit X-1** for the 2022 Plan and **Exhibit X-2** for the Illustrative Plan. Core-based statistical split details are in **Exhibit Y-1a** (MSAs) and **Y-1b** (MPSAs) for the 2022 Plan and **Exhibit Y-2a** (MSAs) and **Y-2b** (MPSAs) for the Illustrative Plan.

(e) Same Race VAP by Majority Districts – Black vs. White

100. As shown in **Figure 18**, under the 2022 Senate Plan, barely half of the statewide Black VAP (50.36%) resides in the 15 majority-Black Senate districts; while 84.33% of the White population resides in majority-White districts.

101. Under the Illustrative Senate Plan, with four additional majority-Black districts (19 in total), the percentage of the Black VAP residing in majority-Black Senate districts moves closer to parity with the White VAP in majority White districts. But Black voters remain at nearly a 17-percentage point disadvantage (58.39% vs. 75.24%).

**Figure 18: Same Race VAP in Majority-Black and Majority-White Districts
Statewide 2022 Senate and Illustrative Senate**

	2020 Black VAP in Majority Black Senate Districts	2020 NH White VAP in Majority White Senate Districts	Statewide Difference (White-Black)
2022 Senate	50.36%	84.33%	33.98%
Illustrative Senate	58.39%	75.24%	16.85%

102. As shown in **Figure 19**, in the four planning districts where the four additional Senate districts are anchored under the Illustrative Senate Plan, the

percentage of the Black VAP residing in majority-Black Senate districts still does not exceed the statewide **84.33%** percentage of White VAP benchmark in majority White Senate districts under the 2022 Senate Plan – Central (68.92%), North Delta (62.12%), Southern (28.78%), Three Rivers (38.08%).

**Figure 19: Same Race VAP in Majority-Black and Majority-White Districts
Regional Planning District Level – 2022 Senate and Illustrative Senate**

Planning Districts (# of new majority BVAP)	Black VAP in Majority Black Districts 2022	White VAP in Majority White Districts	Black VAP in Majority Black Districts Illustrative	White VAP in Majority White Districts Illustrative
Central (1)	71.60%	67.49%	68.92%	50.71%
East Central	43.74%	84.69%	45.92%	79.16%
Golden Triangle	58.94%	74.80%	61.30%	67.21%
North Central	55.97%	81.91%	73.31%	54.81%
North Delta (1)	49.22%	78.76%	62.12%	69.27%
Northeast	0.00%	100.00%	0.00%	100.00%
South Delta	98.91%	1.52%	98.91%	1.52%
Southern (1)	12.27%	97.48%	28.78%	92.24%
Southwest	73.26%	58.20%	82.87%	43.41%
Three Rivers (1)	0.00%	100.00%	38.08%	90.15%

103. And in those same four planning districts, the NH White VAP residing in majority White districts is still higher than the statewide percentage of the Black VAP living in majority Black districts (**50.36%**) under the 2022 Senate Plan – Central (50.71%), North Delta (69.27%), Southern (92.24%), and Three Rivers (90.15%),

F. Postscript – Potential Gulfport Majority-Minority Senate District

104. In the Plaintiffs' Amended Complaint, the Gulfport area is singled-out as an area where another Senate District with a significant minority population

could be drawn. This is obviously the case – and one need look no further than the 2022 House Plan.

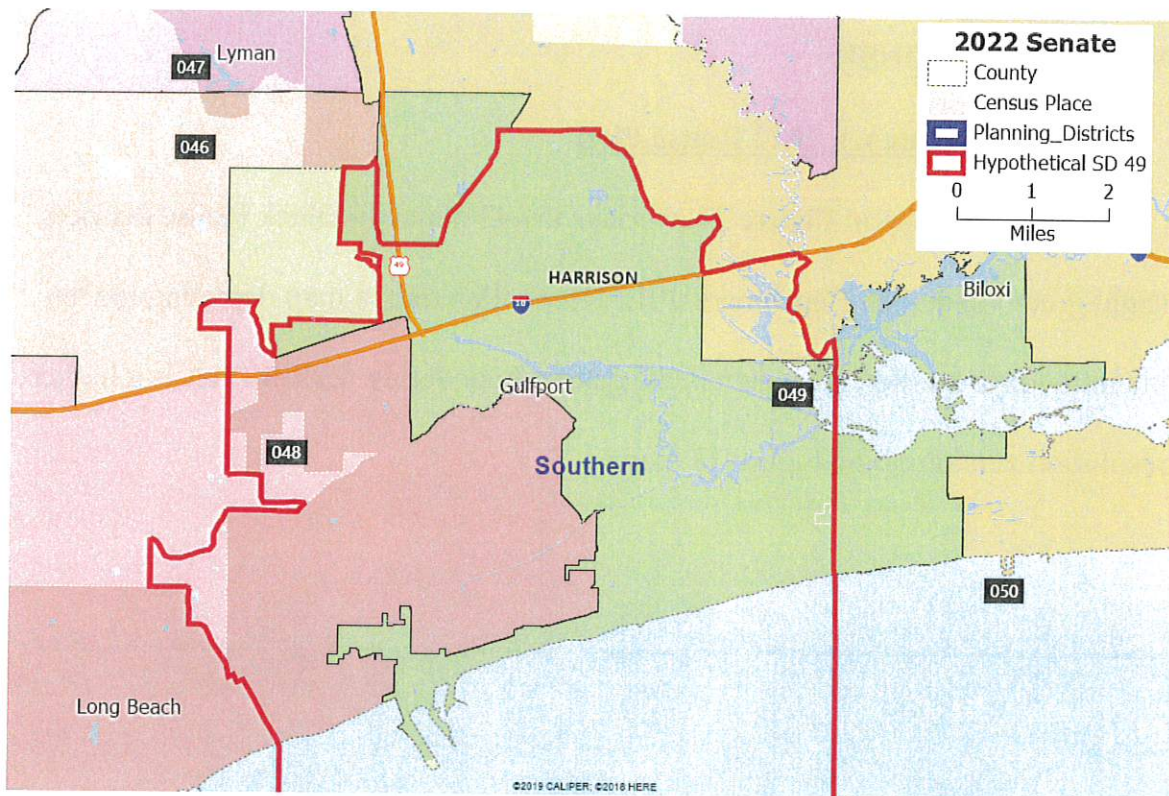
105. By combining 2022 HD 119 (62.5% BVAP) and 2022 HD 118 (25.0% BVAP), both of which are entirely in the City of Gulfport, and then adding in four VTDs in southwest Gulfport (assigned to 2022 HD 120), a minority-majority VAP Senate District (41.45% BVAP, 48.64% NH White) is formed. This hypothetical district is almost entirely within the Gulfport city limits and would eliminate an unnecessary split of the City of Gulfport.³⁷

106. Hypothetical SD 49 in Gulfport is shown in **Figure 20**, but is not included as part of the Illustrative Senate Plan, which focuses solely on “50% plus 1”³⁸ majority-Black districts. As shown in **Exhibit Z-1**, the six-district cluster of modified districts along the Gulf Coast, including Hypothetical SD 49, scores higher on compactness and municipal splits compared to the six 2022 Senate districts in the same general area, with the same number of county splits. (**Exhibit Z-2**).

³⁷ According to the 2020 Census, Gulfport has population of 72,926, of whom 41.61% are Black and 47.1% NH White.

³⁸ *Bartlett v. Strickland*, 556 U.S. 1 (2009).

Figure 20: Southern PDD – City of Gulfport
2022 Senate and Hypothetical Minority Opportunity District 49 (red lines)



107. Hypothetical SD 49 shown in Figure 20 is on the cusp of transitioning to majority-minority CVAP status. According to the 2017-2021 ACS Special Tabulation, the district is 51.37% NH White CVAP, with a Black CVAP of 42.02%.³⁹ Based on citizens of all ages, the hypothetical Gulfport Senate district is

³⁹ The CVAP and citizen levels reported are estimates based on block group level information published by the U.S. Census Bureau's American Communities Survey (ACS). I report the NH DOJ Black CVAP metric. The NH DOJ Black CVAP category includes voting age citizens who are either NH Single-race Black or NH Black and some part White. An "Any Part Black CVAP" category which would include Black Hispanics cannot be calculated from the 5-Year ACS Census Bureau Special Tabulation.

The most current ACS data available is from the 2017-2021 ACS Special Tabulation, with a

majority-minority (52.02%). The NH White citizen population is 47.98%, with a NH DOJ Black citizen population of 44.26%.

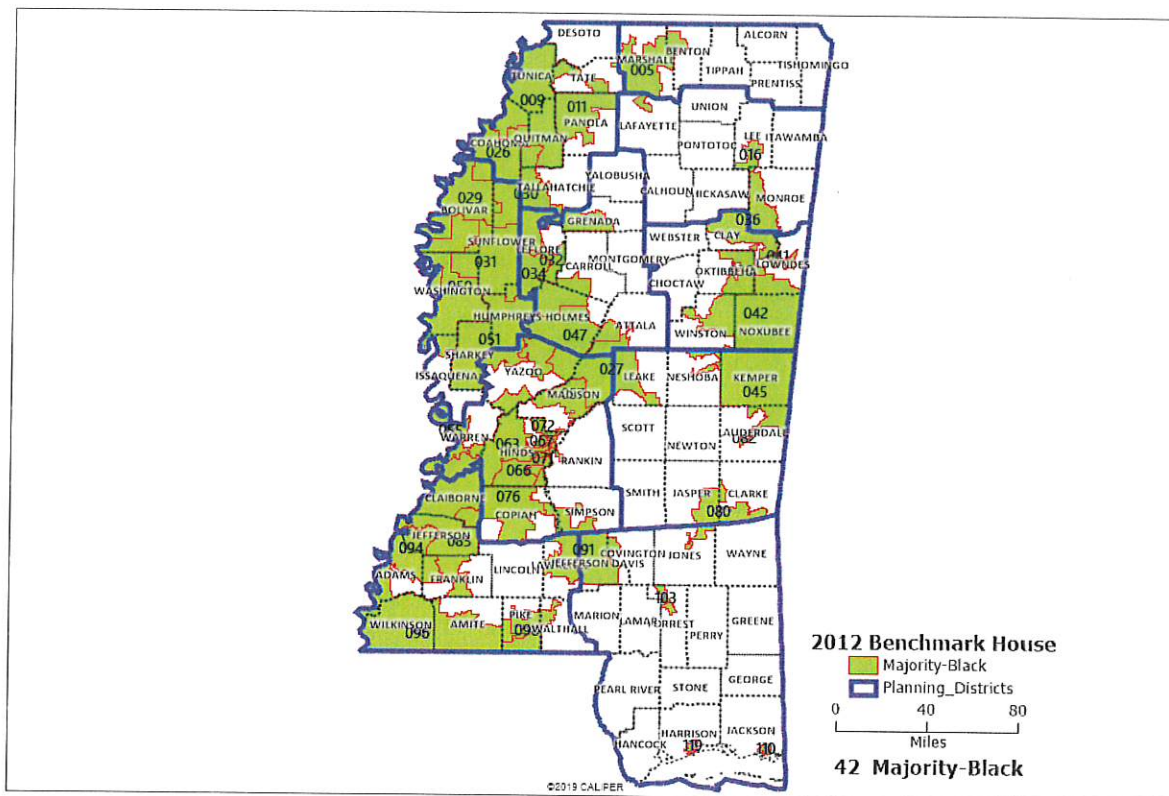
IV. STATE HOUSE

A. Benchmark 2012 House Plan

108. The map in **Figure 21** overlays the 42 majority-Black House districts (light green) under the Benchmark 2012 House Plan onto a map depicting the ten planning districts. Red lines demarcate district boundaries. **Exhibit AA** is a higher resolution version of the Figure 22 map.

survey midpoint of July, 1 2019.

<https://www.census.gov/programs-surveys/decennial-census/about/voting-rights/cvap.html>.

Figure 21: Majority-Black Districts in Benchmark 2012 House (Exhibit AA)

109. **Exhibits AB-1 to AB-10** (color-coded by district) zoom in on each planning district under the Benchmark 2012 House Plan – in alphabetical order from Central Mississippi to Three Rivers.

110. **Exhibit AB-11** is a table I prepared reporting Census 2020 population statistics for the 122 districts in the 2012 Benchmark House Plan. Three-quarters (81) of the 122 House Districts in the Benchmark 2012 Plan were outside a + or - 5% range and therefore had to be modified in some fashion.⁴⁰ Based on the 2020

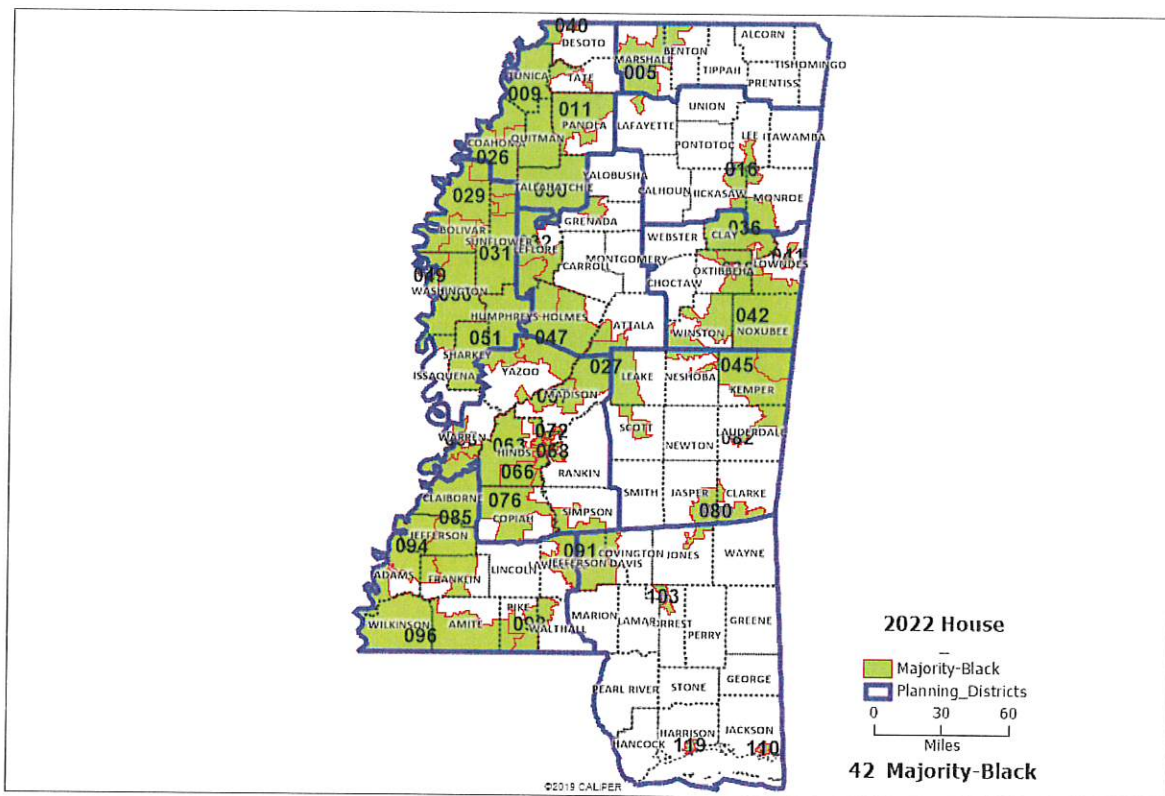
⁴⁰ Based on the 2020 Census, the ideal House district size is 24,273 persons. *See* n. 17 *supra*.

Census, 33 of the 42 Benchmark majority-Black districts were underpopulated. Nine majority-Black districts were within +/- 5% of the ideal size. There were no overpopulated majority-Black House districts in the 2012 Benchmark Plan.

111. **Exhibit AC-1** is a statewide map of the 2012 Benchmark House Plan prepared by MARIS for the Joint Committee. **Exhibit AC-2** is the accompanying statistical package containing population summaries by district.

B. Enacted 2022 House Plan

112. The map in **Figure 22** overlays the 42 majority-Black House districts (light green) under the 2022 Plan onto a map depicting the ten planning districts. Red lines demarcate district boundaries. **Exhibit AD** is a higher resolution version of the Figure 22 map.

Figure 22: Majority-Black Districts in 2022 House Plan (Exhibit AD)

113. **Exhibits AE-1 to AE-10** (color-coded by district) zoom in on each planning district under the 2022 House Plan in alphabetical order from Central Mississippi to Three Rivers. **Exhibit AE-11** is a table I prepared reporting Census 2020 population statistics for the 122 districts in the 2022 House Plan.

114. **Exhibit AF-1** is a statewide map of the 2022 House Plan prepared by MARIS for the Joint Committee. **Exhibit AF-2** is the accompanying statistical package containing population summaries by district.

115. To view all counties assigned by district in the 2022 House Plan refer to **Exhibit AG-1**. To view the 2022 House district core components built from

districts in the Benchmark 2019 House refer to **Exhibit AG-2** – “Core Constituencies”.

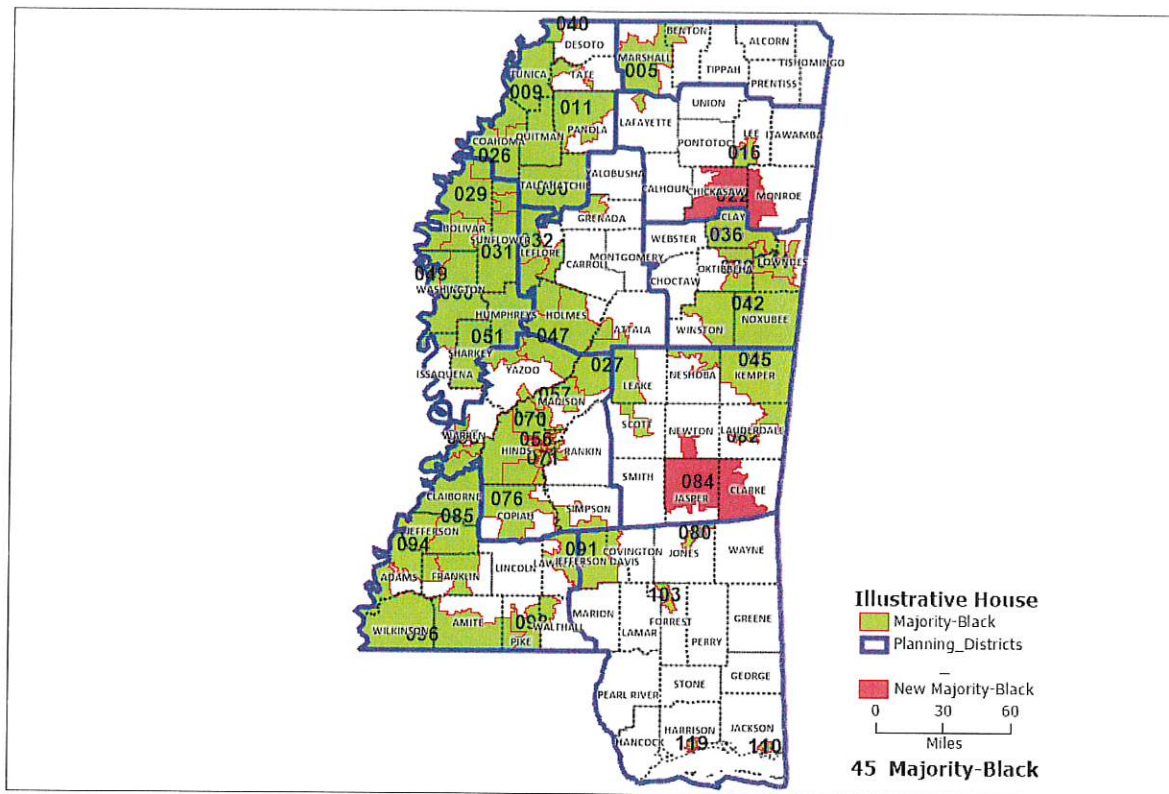
116. An examination of **Exhibit AG-2** reveals that a core constituency representing 79.6% of the state’s population was kept together in the redraw from the Benchmark 2012 House Plan to the 2022 House Plan.⁴¹ Boundaries for all of the 122 Benchmark 2012 House districts are changed under the 2022 Plan.

117. To view all municipalities assigned by district in the 2022 House Plan refer to **Exhibit AG-3**. To view all school districts assigned by district in the 2022 House Plan refer to **Exhibit AG-4**. To view all planning districts assigned by district in the 2022 House Plan refer to **Exhibit AG-5**.

C. Illustrative House Plan

118. The map in **Figure 23** depicts the 45 majority-Black districts (light green) under the Illustrative House Plan. Pink shading demarcates the regions of the state where I have drawn the three additional majority-Black districts. The Illustrative House Plan adds three majority-Black districts anchored in three planning districts: Three Rivers, East Central, and Central. **Exhibit AH** is a higher resolution version of the Figure 23 map.

⁴¹ I define “core population” as the largest district-level subset of a population that is kept together in the shift from one plan to another (without taking into account changes in district numbers or changes in incumbent representation). The core population is identified with shading in the referenced tabular exhibits.

Figure 23: Majority-Black Districts in Illustrative House (Exhibit AH)

119. **Exhibits AI-1 to AI-10** (color-coded by district) zoom in on each planning district under the Illustrative House—in alphabetical order from Central Mississippi to Three Rivers. **Exhibit AI-11** is a table I prepared reporting Census 2020 population statistics for the 122 districts in the Illustrative House Plan.

120. The link below is a statewide interactive map depicting the Illustrative House Plan color-coded in the same fashion as the **Exhibit AI** series. A red-line

overlay depicting the 2022 House districts can be clicked on and off via the legend in the top left corner of the map.⁴²

<https://online.caliper.com/mas-874-drp-290-ujr/maps/li4sz8fk00803s553itd>

121. To view all counties assigned by district in the Illustrative House Plan refer to **Exhibit AJ-1**. To view the Illustrative House district core components built from districts in the 2022 House refer to **Exhibit AJ-2 – “Core Constituencies”**.

122. The Illustrative House Plan changes boundaries for 32 of the House districts as drawn under the 2022 Plan. An examination of **Exhibit AJ-2** reveals that a core population representing 94.3% of the state’s population is kept together at the district level in the redraw from the 2022 House Plan.⁴³

123. To view all municipalities assigned by district in the Illustrative House Plan refer to **Exhibit AJ-3**. To view all school districts assigned by district in the Illustrative House Plan refer to **Exhibit AJ-4**. To view all planning districts assigned by district in the Illustrative House Plan refer to **Exhibit AJ-5**.

⁴² For additional population stats (county and place), click anywhere on the map. Click on the column headings in the sidebar legend to view available population data at the clicked point.

⁴³ I define “core population” as the largest district-level subset of a population that is kept together in the shift from one plan to another (without taking into account changes in district numbers or changes in incumbent representation). The core population is identified with shading in the referenced tabular exhibits.

D. Regional Analysis – Illustrative House vs. 2022 House

124. The section below discusses each additional House district within the context of the regions where they are anchored – organized in a clockwise fashion from Three Rivers PDD in the northeast. The text descriptions of the additional majority-Black House districts in the Illustrative House Plan set forth below are illustrated with side-by-side comparison map exhibits, depicting the 2022 House and the Illustrative House at the same scale. For higher resolution maps, these side-by-side pairings are also included in exhibits identified in the map titles.

(a) Illustrative House District 22 – Three Rivers PDD

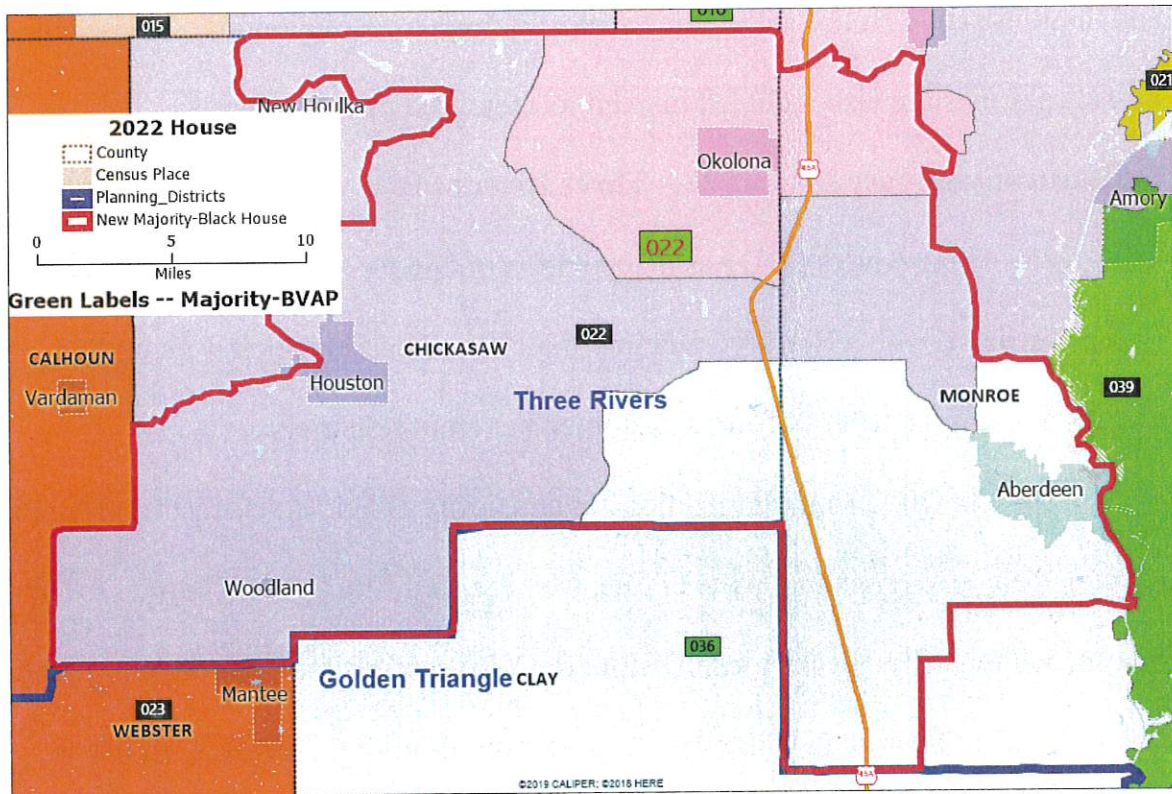
125. Three Rivers PDD has a population of 286,532 (equivalent to about ten House districts), with a Black population of 69,928 (24.4 %) which is more than enough to comprise 100% of two single-member House districts.

126. The 2022 House Plan allocates a majority-Black House district (HD 16) to the Tupelo area (spanning parts of Lee, Monroe, and Chickasaw Counties). Part of a second majority-Black House District (HD 36) extends into the southern part of Three Rivers PDD around Chickasaw and Monroe Counties. However, HD 36 is anchored in the Golden Triangle PDD and the Three Rivers portion of the HD 36 is majority-White.

127. **Figure 24-A** depicts the 2022 House Plan, with the more compact and regularly-shaped Illustrative HD 22 outlined in red. As shown in **Figure 24-A**,

under the 2022 House Plan, majority-White 2022 HD 22 (29.9% BVAP) is sandwiched between HD 36 (61.2% BVAP) and HD 16 (62.3% BVAP), cracking Black population in the midsection of Chickasaw and Monroe Counties. For PDD-level map comparisons, *see* Exhibit AE-10 (2022 Plan) and AI-10 (Illustrative Plan).

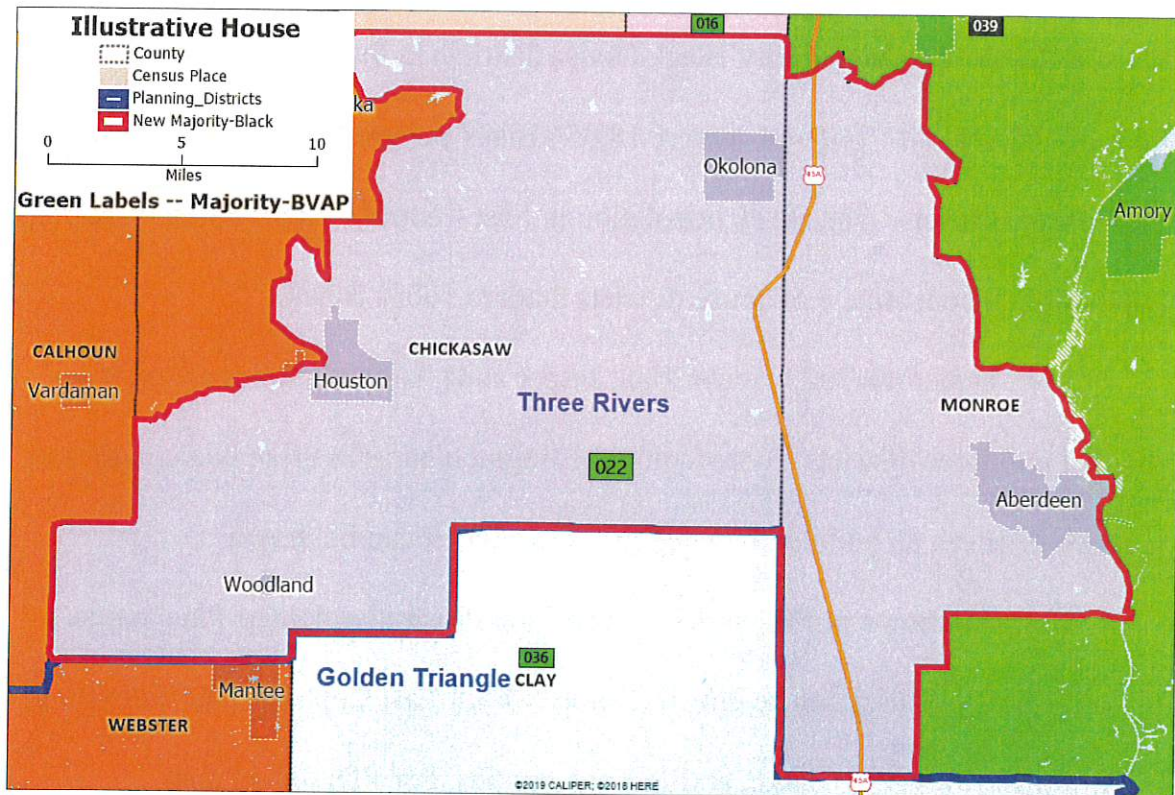
**Figure 24-A: Three Rivers – Chickasaw and Monroe Counties
2022 House and Illustrative HD 22 (red lines) (Exhibit AK-1)**



128. As shown in **Figure 24-B**, a reconfigured majority-Black Lee County/Tupelo Illustrative HD 16 shifts north, making way for new majority-Black district HD 22 entirely within Three Rivers PDD. Illustrative HD 22 encompasses most of Chickasaw County, as well the western part of Monroe County along U.S

Highway 45 in the same general area that is within majority-Black Illustrative Senate District 17 (one of the four additional majority-Black Senate districts).

**Figure 24-B: Three Rivers – Chickasaw and Monroe Counties
Illustrative House and Illustrative HD 22 (red lines) (Exhibit AK-2)**



129. In sum, the Illustrative House Plan unites Black voters in Three Rivers into new majority-Black HD 22 in a part of the state where just 32.7% of the Black voting age population is in a majority-Black district under the 2022 House Plan (*see Figure 32*). Under the Illustrative Plan, the northward shift of HD 16 coupled with uncracking HD 22, places 41.7% of the Three Rivers BVAP in a majority-Black

district.

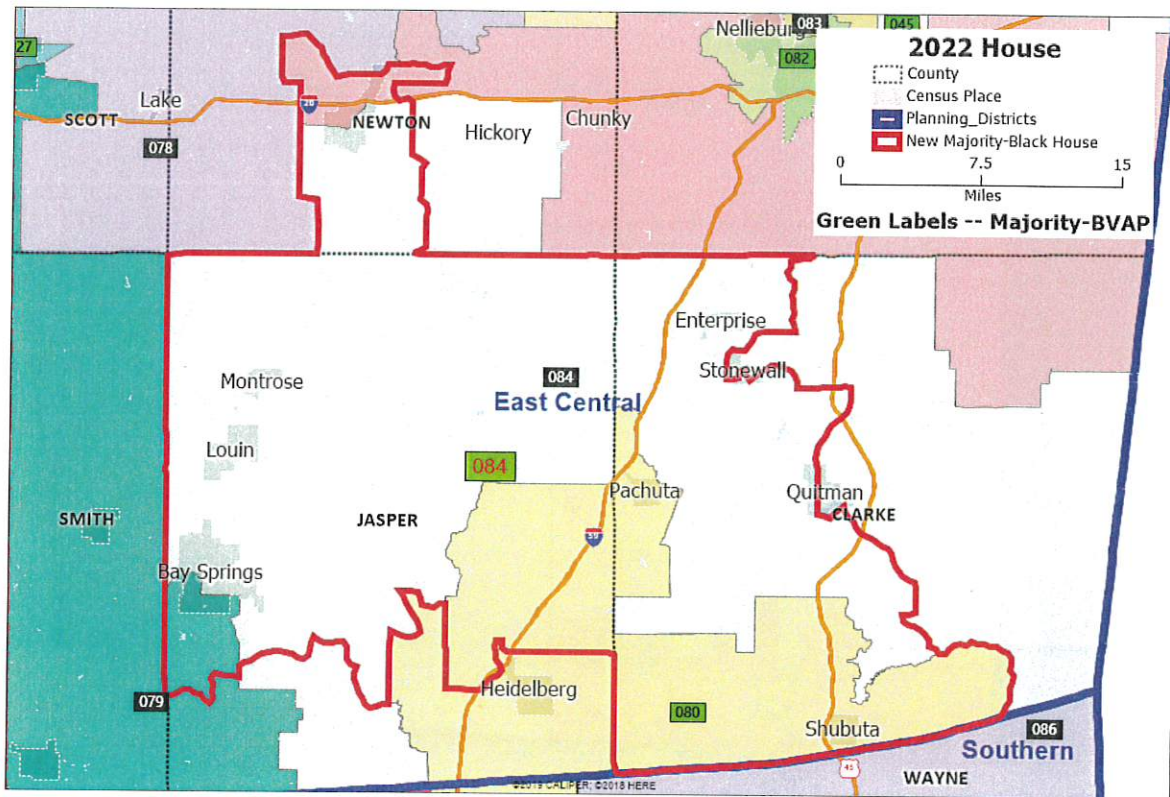
(b) Illustrative House 84 – East Central PDD

130. East Central PDD (pop. 227,806; Black pop. 38.7%) could easily support an additional majority-Black House district. To be sure, East Central PDD contains parts of three majority-Black House districts in the 2022 House Plan – HDs 42, 45, and 80 – but with a mere 18,954 Black persons from East Central in those three districts. The Black population in East Central PDD is 88,263 – enough population to constitute 3.5 House districts that are 100% Black.

131. Under the 2022 House Plan, Jasper and Clarke Counties are each divided into three districts. By reducing the fragmentation in these two counties to just two districts, an additional majority-Black HD 84 can be drawn.

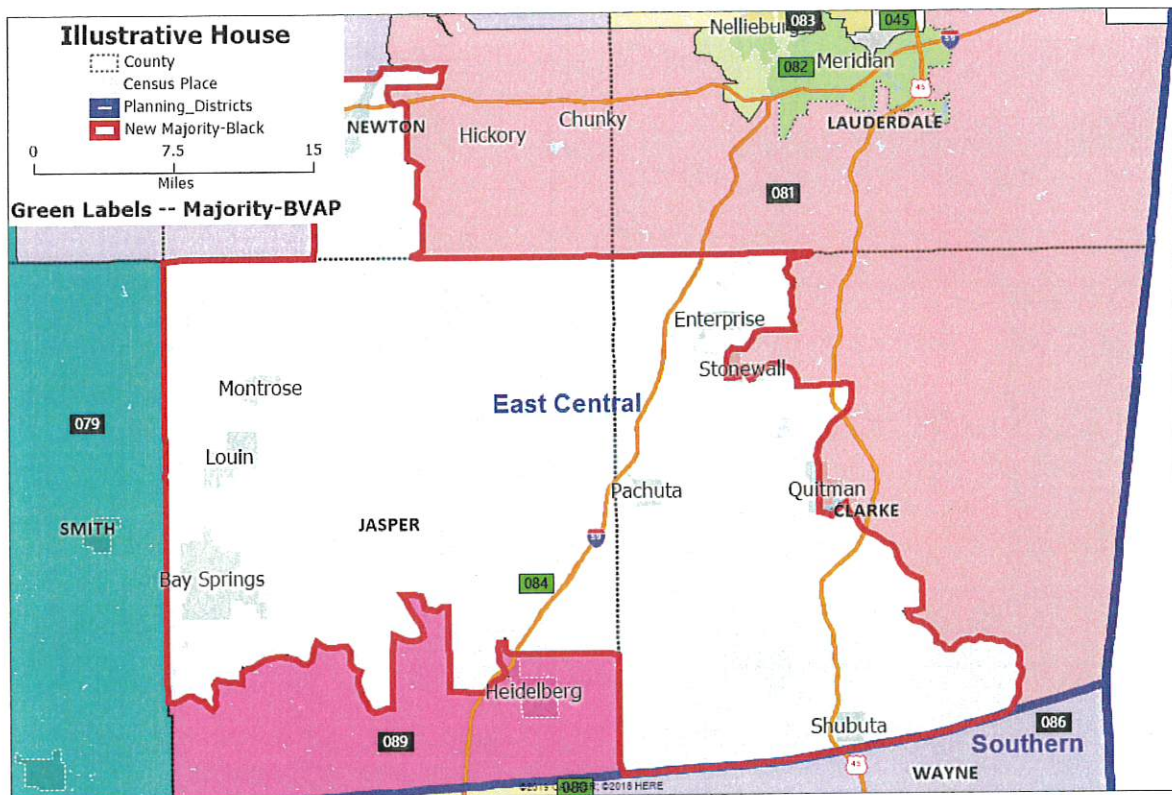
132. As shown in **Figure 25-A**, under the Illustrative House Plan, a new majority-Black district can be drawn entirely within East Central PDD, consisting of portions of Newton, Clarke, and Jasper Counties. For PDD-level map comparisons, see **Exhibit AE-2** (2022 Plan) and **AI-2** (Illustrative Plan).

**Figure 25-A: East Central PDD – Clarke, Jasper & Newton Counties
2022 House and Illustrative HD 84 (red lines) (Exhibit AL-1)**



133. **Figure 25-B** shows the reconfigured majority-Black Illustrative HD 84. Like 2022 HD 84, Illustrative HD 84 also extends into Newton County. But unlike 2022 HD 84, Illustrative HD 84 does not split off the Black population in VTDs in and around the majority-Black City of Newton (pop. 3,195; Black pop. 71.6%) into majority White 2022 HD 81 to the north. Illustrative HD 84 is constructed entirely from whole VTDs.

**Figure 25-B: East Central PDD – Clarke, Jasper, & Newton Counties
Illustrative House and Illustrative HD 84 (red lines) (Exhibit AL-2)**



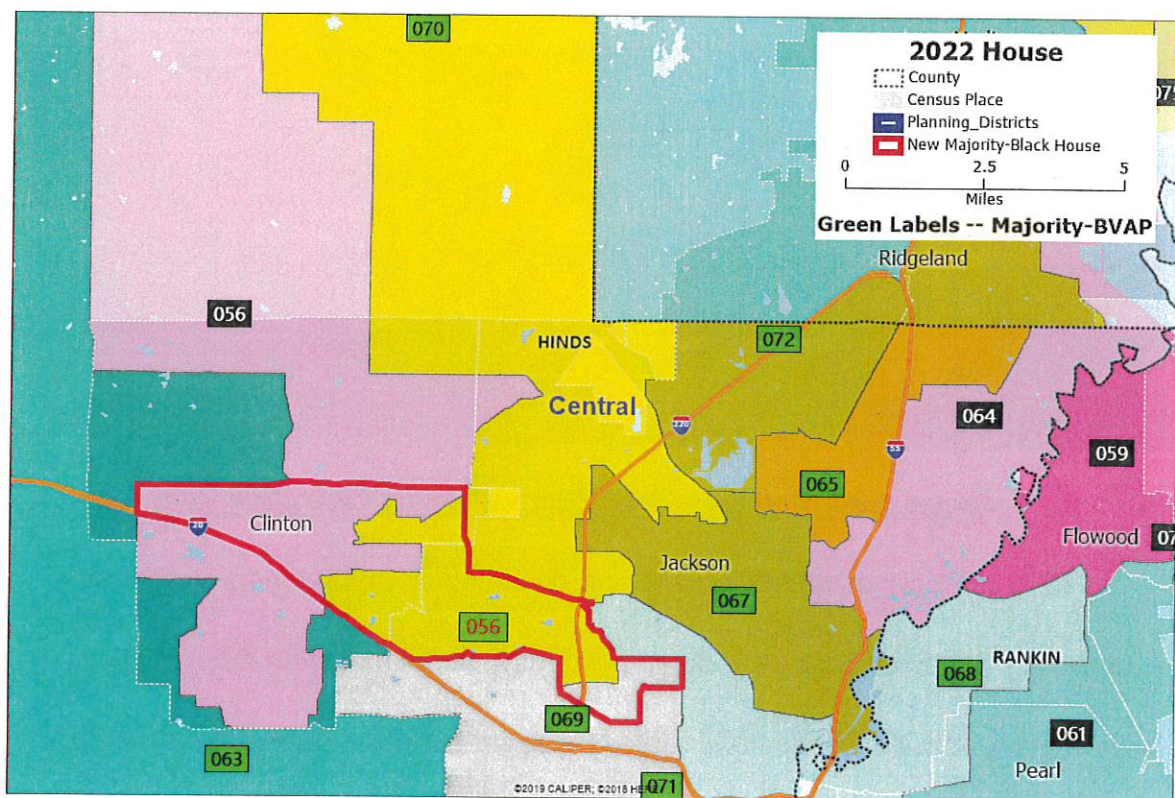
134. In sum, an additional majority-Black House district can be drawn that is entirely in East Central PDD. With these changes to HD 84, 61.15% of the BVAP is in a majority Black district.

(c) Illustrative House – Central PDD

135. An additional urban House District can be drawn in Central PDD (in Hinds County) joining Black neighborhoods in the western part of Jackson (pop. 153,701; Black pop. 80.45%) with predominantly Black neighborhoods in the

adjacent City of Clinton (pop. 28,100; Black pop. 39.44%).⁴⁴ As shown in **Figure 26-A**, Illustrative HD 56 unpacks Black population in 2022 HD 69 (90.36% BVAP, see **Exhibit AE-11**) and 2022 HD 70 (83.18% BVAP). For PDD-level map comparisons, see **Exhibit AE-1** (2022 Plan) and **AG- 1** (Illustrative Plan).

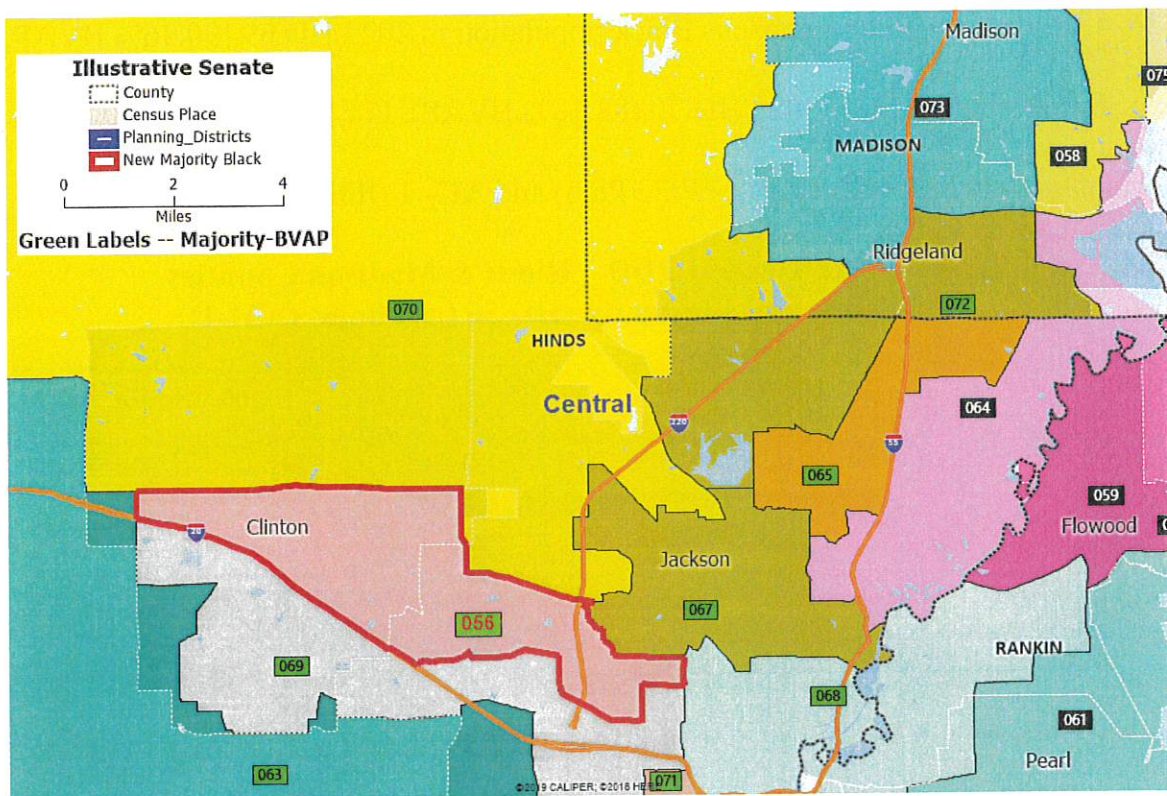
**Figure 26-A: Central PDD – Hinds & Madison Counties
2022 House and Illustrative HD 56 (red lines) (AM-1)**



136. **Figure 26-B** depicts the Illustrative Plan, with new HD 56 as a regularly shaped district encompassing a part of Clinton that is already assigned to majority-Black Senate districts under the 2022 Senate.

⁴⁴ Clinton has experienced significant Black population growth over the past two decades – from 22.8% Black to about 40% Black this decade.

**Figure 26-B: Central PDD – Hinds & Madison Counties
Illustrative House and Illustrative HD 56 (red lines) (Exhibit AM-2)**



E. House Plan Metrics – 2022 Plan vis-à-vis Illustrative Plan

137. For ease of reference, this section contains, in large part, verbatim explanatory text from Section E *supra* describing the Senate plan metrics. To a large degree, metrics for the Illustrative House are simply a reflection of the 2022 Plan because 89 of the 2022 House districts are unchanged.

138. The districts in the Illustrative House Plan are reasonably shaped and compact. **Exhibit AN-1** reports district-by-district compactness scores generated by Maptitude for the 2022 House. Compactness scores for the Illustrative House are in

Exhibit AN-2. Each exhibit reports three compactness scores: Reock, Polsby-Popper, and Convex Area/Hull.⁴⁵ Higher scores indicate higher compactness.

139. The table in **Figure 28** summarizes compactness measures based on the Reock, Polsby-Popper (the two most commonly referenced tests) and Area/Convex-Hull for the 2022 House, alongside scores for the Illustrative Plan.

Figure 27: Compactness Scores – 2022 House vs. Illustrative House Plan

	Reock#		Polsby-Popper#		Area/Convex-Hull#	
	Mean	Low	Mean	Low	Mean	Low
2022 House						
All Districts	.38	.15	.27	.09	.71	.46
42 Majority-Black Districts	.38	.22	.24	.11	.70	.52
Illustrative House Plan						
All Districts	.38	.15	.27	.10	.72	.51
45 Majority-Black Districts	.38	.18	.24	.11	.70	.52

Higher is better (*i.e.*, more compact).

⁴⁵ “The Reock test is an area-based measure that compares each district to a circle, which is considered to be the most compact shape possible. For each district, the Reock test computes the minimum, maximum, mean and standard deviation for the ratio of the area of the district to the area of the minimum enclosing circle for the district. The measure is always between 0 and 1, with 1 being the most compact. The Reock test computes one number plan.” *Maptitude For Redistricting* software documentation (authored by the Caliper Corporation).

The Polsby-Popper test computes the ratio of the district area to the area of a circle with the same perimeter: $4\pi \text{Area} / (\text{Perimeter}^2)$. The measure is always between 0 and 1, with 1 being the most compact. The Polsby-Popper test computes one number for each district and the minimum, maximum, mean and standard deviation for the plan. *Id.*

The Area/Convex Hull test computes the ratio the district area to the area of the convex hull of the district (minimum convex polygon which completely contains the district). The measure is always between 0 and 1, with 1 being the most compact. The Minimum Convex Polygon test computes one number for each district and the minimum, maximum, mean and standard deviation for the plan. *Id.*

140. In sum, the Illustrative House Plan scores the same on the Reock and Polsby-Popper measures. However, the Illustrative House has a higher minimum score on Polsby-Popper and both the Convex Hull mean and minimum measures are higher.

141. Also reported in **Figure 27** are comparison scores for the majority-Black districts in the 2022 House (**Exhibit AN-3**) and the majority Black districts in the Illustrative Plan (**Exhibit AN-4**). With the three additional majority-Black districts as drawn in the Illustrative Plan, mean and minimum scores are the same as the majority-Black subset under the 2022 Plan, with the exception of the Reock which is higher under the 2022 Plan. Still, the .18 Reock score is higher than the overall minimum .15 score for the 2022 Plan.

(b) Political Subdivision Splits

142. The table in **Figure 28** compares district splits by county and 2020 VTD for the 2022 House (**Exhibit AO-1**) and the Illustrative House Plan (**Exhibit AO-2**). Municipal split counts are in **Exhibit AP-1** for the 2022 Plan and **Exhibit AP-2** for the Illustrative Plan.

Figure 28: Political Subdivision Splits (excluding unpopulated areas)

	Split Counties*	Total County Splits*	2020 VTD Splits*	Municipalities Not Split #	Total Municipal Splits*
2022 House	67	179	255	216	225
Illustrative House	67	167	228	218	221

* Lower is better (*i.e.*, fewer splits); # Higher is better (*i.e.*, more unsplit jurisdictions)

143. As **Figure 28** reveals, the Illustrative House is superior to the 2022 House in terms of VTD splits and municipal splits. Both plans split 67 of the 82 counties in the state. However, the Illustrative House Plan contains a total of 167 county splits (unique county-districts combinations), while the 2022 House contains a total of 179 county splits (unique county-district combinations).

144. The Illustrative House splits populated areas in 228 VTDs (of 1,834 VTDs), compared to 255 populated splits under the 2022 House.⁴⁶

145. The Illustrative House keeps 218 municipalities whole, with 221 populated splits. The 2022 House keeps 216 municipalities whole, with 225 populated splits.

⁴⁶ A populated split divides population in a VTD or municipality into two or more districts. Generally, unpopulated splits involve splits due to bodies of waters or municipal boundaries. Precinct boundaries are in a constant state of flux in Mississippi.

It is common for precinct boundaries to be changed in Mississippi and most other states. In the 2020 PL-94-171 file there are 1,834 VTDs, compared to 1,969 VTDs in the 2010 PL-94-171 file.

(c) School District Splits

146. The Legislature is a primary source of funds for Mississippi's public schools. Not surprisingly, split school districts can be an issue for voters.⁴⁷ For school year 2022-2023, minorities comprise the majority of students enrolled in public schools – White students comprised 42.59% of those enrolled and Black students 46.99%.⁴⁸

147. The table in **Figure 29** compares splits by school district for the 2022 House and the Illustrative House. Split school districts are identified in **Exhibit AQ-1** for the 2022 Plan and **Exhibit AQ-2** for the Illustrative Plan. Based on population percentages (all ages), there are 44 majority-Black school districts.⁴⁹

Figure 29: School District splits (excluding unpopulated areas)

	School Districts Not Split #	School District Splits*	Majority-Black School District Not Split#	Majority-Black School District Splits*
2022 House	26	361	12	95
Illustrative House	29	358	13	87

* Lower is better (*i.e.*, fewer splits); # Higher is better (*i.e.*, more unsplit jurisdictions)

148. As **Figure 29** reveals, the Illustrative House contains more whole school districts – 29 vs. 26 – with fewer school district splits (unique school

⁴⁷ The 2020 Census reports that there are 138 unified school districts in Mississippi,

⁴⁸ Mississippi Department of Education, *Data Explorer*, <https://mdereports.mdek12.org/DataExplorer>.

⁴⁹ Majority-Black school districts in Figure 30 are based on population rather than school enrollment figures, which are not available from the 2020 Census or its component geography.

district/legislative district combinations) – 358 vs. 361 – and, as detailed in **Exhibits AR-1** and **AR-2** fewer majority-Black school district splits (87 vs. 95).

(d) Regional Splits

149. Like state-defined planning districts, federally defined core-based statistical areas are a way to define regional communities of interest. The Census Bureau-produced map in **Exhibit E-1** shows Metropolitan Statistical Areas (“MSAs”) and Micropolitan Statistical Areas (“MPSAs”) as defined by the U.S. Office of Planning and Budget.

150. As **Figure 30** reveals, the Illustrative Plan is superior to the 2022 House in terms of state-defined planning and development district splits and federally defined MSA splits. Compared to the 2022 House Plan, the Illustrative House Plan contains fewer planning district splits (151 vs. 155) and fewer MPSA splits (83 vs. 76), with the same number of MSA splits (74).

Figure 30: PDD Splits, MSA Splits, MPSA splits

	Planning District Splits *	MSA Splits *	MPSA Splits*
2022 House	155	74	83
Illustrative House	151	74	76

* Lower is better (i.e., fewer splits);

151. Planning district split details are in **Exhibit AS-1** for the 2022 Plan and **Exhibit AS-2** for the Illustrative Plan. Core-based statistical split details are in

Exhibit AT-1a (MSAs) and **AT-1b** (MPSAs) for the 2022 Plan and **Exhibit AT-2a** (MSAs) and **AT-2b** (MPSAs) for the Illustrative Plan.

(e) Same Race VAP by Majority Districts Black vs. White

152. Under the 2020 House, 62.4% of statewide Black VAP resides in the 42 majority-Black House districts and 82.9% of the statewide White VAP resides in majority-White districts.

153. As shown in **Figure 31**, under the Illustrative House, with three additional majority-Black districts (45 in total), the percentage of the Black VAP residing in majority-Black House districts inches up. But a 15-percentage point Black/White gap remains – 64.78% of the Black VAP would reside in majority-Black districts, as compared to 80.12% of the White VAP in majority-White districts.

**Figure 31: Same Race VAP in Majority-Black and Majority-White Districts
Statewide 2022 House and Illustrative House**

Legislative Plan	2020 Black VAP in Majority Black House Districts	2020 NH White VAP in Majority White House	Statewide Difference (White-Black)
2022 House	62.38%	82.92%	20.53%
Illustrative House	64.78%	80.12%	15.34%

154. As shown in **Figure 32**, in the three planning districts where additional House districts are anchored under the Illustrative House, the percentage of the Black VAP residing in majority-Black House districts remains below the statewide

82.92% percentage of the White voting age population living in majority White house districts under the 2022 House Plan – Central (80.66%), East Central (61.15%) and Three Rivers (41.7%).

**Figure 32: Same Race VAP in Majority-Black and Majority-White Districts
Regional Planning District Level – 2022 House and Illustrative House**

Planning Districts (# of new majority BVAP)	Black VAP in Majority Black Districts 2022	White VAP in Majority White Districts 2022	Black VAP in Majority Black Districts Illustrative	White VAP in Majority White Districts Illustrative
Central (1)	78.33%	72.35%	80.66%	66.32%
East Central (1)	51.74%	83.97%	61.15%	75.46%
Golden Triangle	71.66%	67.74%	76.11%	59.96%
North Central	66.41%	79.71%	66.41%	79.71%
North Delta	57.26%	79.60%	57.26%	79.60%
Northeast	44.52%	92.05%	44.52%	92.05%
South Delta	99.14%	1.03%	99.14%	1.03%
Southern	34.21%	94.72%	35.18%	94.07%
Southwest	73.54%	62.10%	73.54%	62.10%
Three Rivers (1)	32.69%	94.56%	41.73%	90.68%

155. Furthermore, in all three planning districts with additional majority-Black House districts, the NH White VAP residing in majority White districts is higher than the statewide **62.38%** percentage of the Black voting age population residing in majority Black districts under the 2022 House Plan – Central (66.32%), East Central (75.46%), and Three Rivers (90.68%).

F. Postscript – Three Minority Opportunity House Districts

156. The Plaintiffs' Amended Complaint identifies two areas in the state where legislative map drawers altered the 2012 Benchmark House, so that Black

voter influence is reduced under the 2022 House Plan – (a) in the vicinity of Grenada County around 2022 HD 34 and HD 46 (b) in eastern Hinds County around 2022 HD 64.

157. The Illustrative House Plan I drew makes changes to the 2022 House only in certain areas of the state where additional “50% plus 1” majority-Black districts could likely be drawn. Nonetheless, the Illustrative Plan could easily be revised to create opportunity districts in the Grenada area and in eastern Hinds County area.

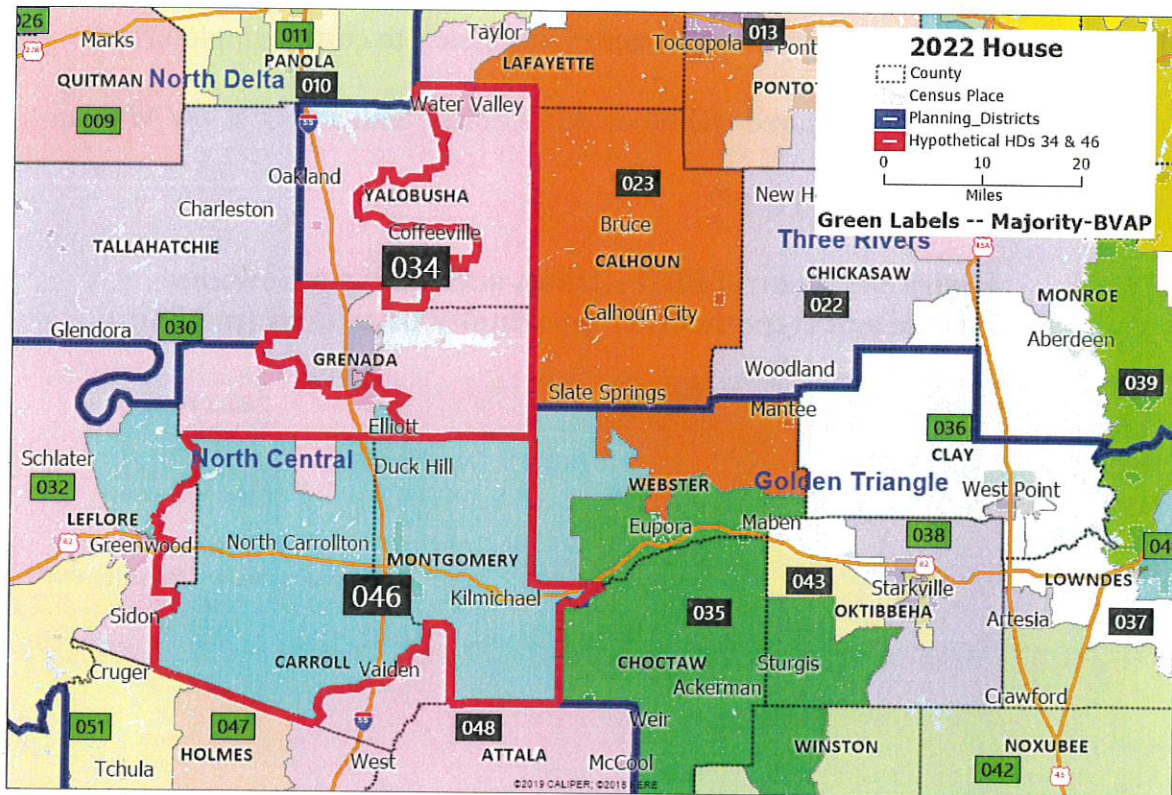
(a) Grenada area (North Central PDD)

158. The map in **Figure 33** demonstrates that two additional minority opportunity districts could be drawn in the North Central PDD in the general vicinity of City of Grenada— and merged with minimal disruption to other districts in the 2022 House Plan.

159. Hypothetical HD 34 (45% BVAP) includes most of the city of Grenada, as well as the eastern parts of Grenada and Yalobusha Counties. As drawn in the 2022 House Plan, HD 34 is 30% BVAP.

160. Hypothetical HD 46 (46% BVAP) could be drawn just to the south of the city of Grenada in Carroll, Leflore and Montgomery Counties As drawn in the 2022 House Plan, HD 46 is 31.7% BVAP.

Figure 33: North Central PDD Region
2022 House and Hypothetical Opportunity Districts 34 and 46 (red lines)



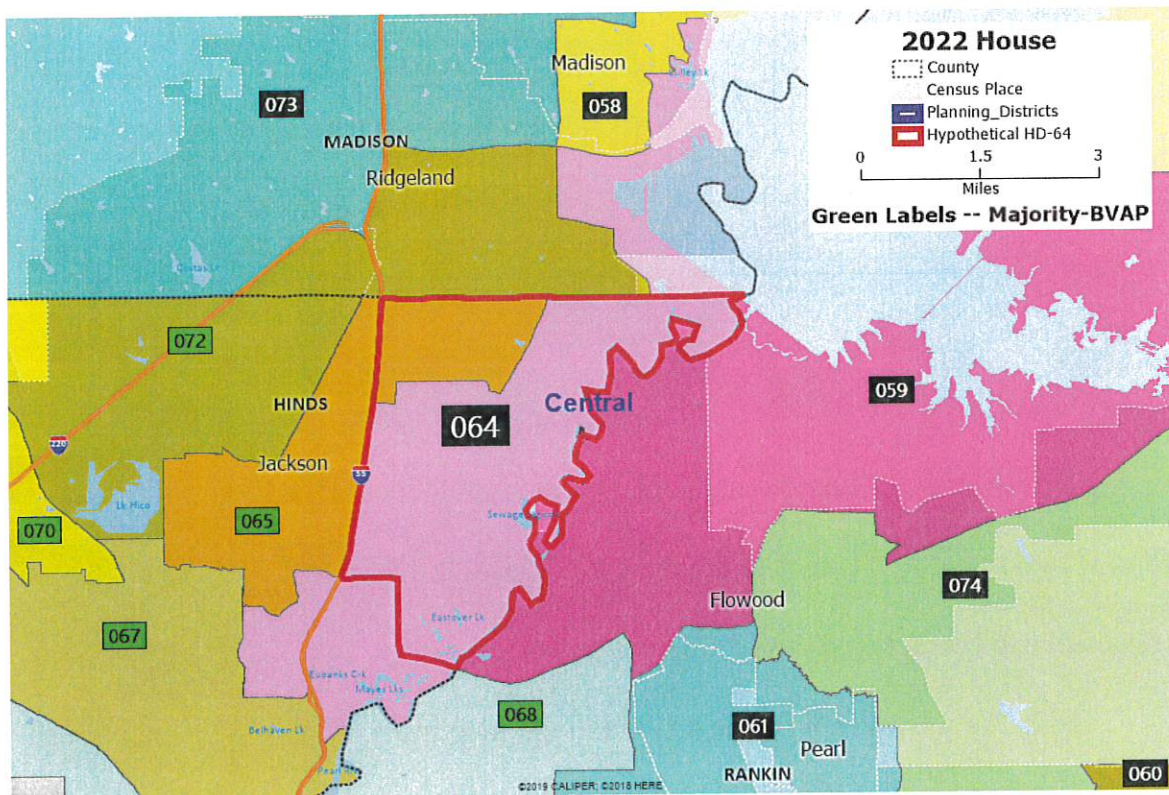
161. Merging Hypothetical HD 34 and Hypothetical HD 46 into the 2022 Plan would result in changes to adjacent 2022 HDs 8, 11, 23, 30, 32, 47, and 51 (necessary to correct ripple-effect deviation issues).

162. As shown in **Exhibit AU-1** and the map in **Exhibit AU-2** – including the seven modified adjacent districts impacted by Hypothetical HDs 34 and 46 – the nine-district cluster scores higher on compactness, county splits and VTD splits than the 2022 House districts in the same general area (**Exhibit AU-3**).

(b) Eastern Hinds County Area – Central PDD

163. Likewise, as shown in **Figure 34**, with minor modifications to the 2022 House Plan in Hinds and Madison Counties (necessary to correct ripple-effect deviation issues), reconfigured HD 64 could be drawn with a 44.3 % BVAP – up from 31% under the 2022 Plan.⁵⁰

**Figure 34: Central PDD – Hinds and Madison Counties
2022 House and Hypothetical Opportunity District 64 (red lines)**



164. As shown in **Exhibit AV-1** and the map in **Exhibit AV-2** – including the three modified adjacent districts (HDs 65, 67 and 72) – the four-district cluster

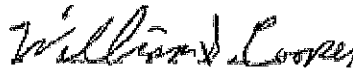
⁵⁰ With additional precinct shifts in Hinds and Madison Counties – impacting only HDs 64, 65, and 72 – HD 64 could be reconfigured as an additional majority-Black district.

scores substantially better on compactness, and had fewer VTD splits and municipal splits, compared to the 2022 House districts in the same general area (**Exhibit AV-3**).

###

I reserve the right to amend or supplement my report in light of additional facts, testimony and/or materials that may come to light. Pursuant to 28 U.S.C. 1746, I declare under penalty of perjury of the laws of the United States that the foregoing is true and correct according to the best of my knowledge, information, and belief.

Executed on August 28, 2023.

A handwritten signature in cursive script, appearing to read "William S. Cooper".

William S. Cooper

EXHIBIT A

PTX-001-080

August 15, 2023

*William S. Cooper
P.O. Box 16066
Bristol, VA 24209
276-669-8567
bcooper@msn.com*

Summary of Redistricting Work

I have a B.A. in Economics from Davidson College in Davidson, North Carolina.

Since 1986, I have prepared proposed redistricting maps of approximately 750 jurisdictions for Section 2 litigation, Section 5 comment letters, and for use in other efforts to promote compliance with the Voting Rights Act of 1965. I have analyzed and prepared election plans in over 100 of these jurisdictions for two or more of the decennial censuses – either as part of concurrent legislative reapportionments or, retrospectively, in relation to litigation involving many of the cases listed below.

From 1986 to 2023, I have prepared election plans for Section 2 litigation in Alabama, Connecticut, Florida, Georgia, Louisiana, Maryland, Massachusetts, Mississippi, Missouri, Montana, Nebraska, New Jersey, New York, North Carolina, Ohio, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, Washington, and Wyoming.

Post-2020 Redistricting Experience

Since the release of the 2020 Census, county commission-level plans I developed as a private consultant have been adopted by local governments in San Juan County, Utah, Bolivar County, Mississippi, and Washington County, Mississippi. In addition, a school board plan I developed was adopted by the Jefferson County, Alabama Board of Education subsequent to my expert work in the case of *Jones v. Jefferson County Board of Education*.

In October 2021, I briefly served as a consultant to the city council in Wenatchee,

August 15, 2023

Washington and determined that the 2018 redistricting plan I drew is not malapportioned under the 2020 Census.

Since 2022, I have testified at trial in eight Sec. 2 lawsuits: Alabama (Congress), Arkansas (Supreme and Appellate Courts), Florida (voter suppression), Georgia (Legislature – House and Senate) and Congress), Louisiana (Congress) , and Maryland (Baltimore County Commission and Town of Federalsburg).

2010s Redistricting Experience

I developed statewide legislative plans on behalf of clients in nine states (Alabama, Connecticut, Florida, Georgia, Kentucky, Mississippi, South Carolina, Texas, and Virginia), as well as over 150 local redistricting plans in approximately 30 states – primarily for groups working to protect minority voting rights. In addition, I have prepared congressional plans for clients in eight states (Alabama, Florida, Georgia, Louisiana, Maryland, Ohio, Pennsylvania, South Carolina, and Virginia).

In March 2011, I was retained by the Sussex County, Virginia Board of Supervisors and the Bolivar County, Mississippi Board of Supervisors to draft new district plans based on the 2010 Census. In the summer of 2011, both counties received Section 5 preclearance from the U.S. Department of Justice (DOJ).

Also in 2011, I was retained by way of a subcontract with Olmedillo X5 LLC to assist with redistricting for the Miami-Dade County, Florida Board of Commissioners and the Miami-Dade, Florida School Board. Final plans were adopted in late 2011 following public hearings.

In the fall of 2011, I was retained by the City of Grenada, Mississippi to provide redistricting services. The ward plan I developed received DOJ preclearance in March 2012.

August 15, 2023

In 2012 and 2013, I served as a redistricting consultant to the Tunica County, Mississippi Board of Supervisors and the Claiborne County, Mississippi Board of Supervisors.

In *Montes v. City of Yakima* (E.D. Wash. Feb. 17, 2015) the court adopted, as a remedy for the Voting Rights Act Section 2 violation, a seven single-member district plan that I developed for the Latino plaintiffs. I served as the expert for the Plaintiffs in the liability and remedy phases of the case.

In *Pope v. Albany County* (N.D.N.Y. Mar. 24, 2015), the court approved, as a remedy for a Section 2 violation, a plan drawn by the defendants, creating a new Black-majority district. I served as the expert for the Plaintiffs in the liability and remedy phases of the case.

In 2016, two redistricting plans that I developed on behalf of the plaintiffs for consent decrees in Section 2 lawsuits in Georgia were adopted (*NAACP v. Fayette County, Georgia* and *NAACP v. Emanuel County, Georgia*).

In 2016, two federal courts granted summary judgment to the plaintiffs based in part on my *Gingles 1* testimony: *Navajo Nation v. San Juan County, Utah* (C.D. Utah 2016) and *NAACP v. Ferguson-Florissant School District, Missouri* (E. D. Mo. August 22, 2016).

Also in 2016, based in part on my analysis, the City of Pasco, Washington admitted to a Section 2 violation. As a result, in *Glatt v. City of Pasco* (E.D. Wash. Jan. 27, 2017), the court ordered a plan that created three Latino majority single-member districts in a 6 district, 1 at-large plan.

In 2018, I served as the redistricting consultant to the Governor Wolf interveners at the remedial stage of *League of Women Voters, et al. v. Commonwealth of Pennsylvania*.

August 15, 2023

In August 2018, the Wenatchee City Council adopted a hybrid election plan that I developed – five single-member districts with two members at-large. The Wenatchee election plan is the first plan adopted under the Washington Voting Rights Acts of 2018.

In February 2019, a federal court ruled in favor of the plaintiffs in a Section 2 case regarding Senate District 22 in Mississippi, based in part on my *Gingles* 1 testimony in *Thomas v. Bryant* (S.D. Ms. Feb 16, 2019).

In the summer of 2019, I developed redistricting plans for the Grand County (Utah) Change of Form of Government Study Committee.

In May 2020, a federal court ruled in favor of the plaintiffs in a Section 2 case in *NAACP et al. v. East Ramapo Central School District, NY*, based in part on my *Gingles* 1 testimony. In October 2020, the federal court adopted a consent decree plan I developed for elections to be held in February 2021.

In May and June of 2020, I served as a consultant to the City of Quincy, Florida – the Defendant in a Section 2 lawsuit filed by two Anglo voters (*Baroody v. City of Quincy*). The federal court for the Northern District of Florida ruled in favor of the Defendants. The Plaintiffs voluntarily dismissed the case.

In the summer of 2020, I provided technical redistricting assistance to the City of Chestertown, Maryland.

I served as expert for the plaintiffs in *Jayla Allen v. Waller County, Texas*. I testified remotely at trial in October 2020.

Since 2011, I have served as a redistricting and demographic consultant to the Massachusetts-based Prison Policy Initiative for a nationwide project to end prison-based gerrymandering. I have analyzed proposed and adopted election plans in about 25 states as part of my work.

August 15, 2023

In 2018 (Utah) and again in 2020 (Arizona), I have provided technical assistance to the Rural Utah Project for voter registration efforts on the Navajo Nation Reservation.

Post-2010 Demographics Experience

My trial testimony in Section 2 lawsuits usually includes presentations of U.S. Census data with charts, tables, and/or maps to demonstrate socioeconomic disparities between non-Hispanic Whites and racial or ethnic minorities.

I served as a demographic expert for plaintiffs in four state-level voting cases related to the Covid-19 pandemic (South Carolina, Alabama, and Louisiana) and state court in North Carolina.

I have also served as an expert witness on demographics in non-voting trials. For example, in an April 2017 opinion in *Stout v. Jefferson County Board of Education* (Case no.2:65-cv-00396-MHH), a school desegregation case involving the City of Gardendale, Ala., the court made extensive reference to my testimony.

I provide technical demographic and mapping assistance to the Food Research and Action Center (FRAC) in Washington D.C and their constituent organizations around the country. Most of my work with FRAC involves the Summer Food Program and Child and Adult Care Food Program. Both programs provide nutritional assistance to school-age children who are eligible for free and reduced price meals. As part of this project, I developed an online interactive map to determine site eligibility for the two programs that has been in continuous use by community organizations and school districts around the country since 2003. The map is updated annually with new data from a Special Tabulation of the American Community Survey prepared by the U.S. Census Bureau for the Food and Nutrition Service of the U.S. Department of Agriculture.

August 15, 2023

Historical Redistricting Experience

In the 1980s and 1990s, I developed voting plans in about 400 state and local jurisdictions – primarily in the South and Rocky Mountain West. During the 2000s and 2010s, I prepared draft election plans involving about 350 state and local jurisdictions in 25 states. Most of these plans were prepared at the request of local citizens' groups, national organizations such as the NAACP, tribal governments, and for Section 2 or Section 5 litigation.

Election plans I developed for governments in two counties – Sussex County, Virginia and Webster County, Mississippi – were adopted and precleared in 2002 by the U.S. Department of Justice. A ward plan I prepared for the City of Grenada, Mississippi was precleared in August 2005. A county supervisors' plan I produced for Bolivar County, Mississippi was precleared in January 2006.

In August 2005, a federal court ordered the State of South Dakota to remedy a Section 2 voting rights violation and adopt a state legislative plan I developed (*Bone Shirt v. Hazeltine*).

A county council plan I developed for Native American plaintiffs in a Section 2 lawsuit (*Blackmoon v. Charles Mix County*) was adopted by Charles Mix County, South Dakota in November 2005. A plan I drafted for Latino plaintiffs in Bethlehem, Pennsylvania (*Pennsylvania Statewide Latino Coalition v. Bethlehem Area School District*) was adopted in March 2009. Plans I developed for minority plaintiffs in Columbus County, North Carolina and Montezuma- Cortez School District in Colorado were adopted in 2009.

Since 1986, I have testified at trial as an expert witness on redistricting and demographics in federal courts in the following voting rights cases (approximate most recent testimony dates are in parentheses). I also filed declarations and was deposed in

August 15, 2023

most of these cases.

Alabama

Caster v. Merrill (2022)

Chestnut v. Merrill (2019)

Alabama State Conference of the NAACP v. Alabama (2018)

Alabama Legislative Black Caucus et al. v. Alabama et al. (2013)

Arkansas

The Christian Ministerial Alliance v. Hutchinson (2022)

Colorado

Cuthair v. Montezuma-Cortez School Board (1997)

Florida

NAACP v. Lee (2022)

Baroody v. City of Quincy (2020)

Georgia

Pendergrass v. Raffensperger (2022)

Alpha Phi Alpha v. Raffensperger (2022)

Cofield v. City of LaGrange (1996)

Love v. Deal (1995)

Askew v. City of Rome (1995)

Woodard v. Lumber City (1989)

Louisiana

Galmon v. Ardoin (2022)

Terrebonne Parish NAACP v. Jindal, et al. (2017)

Wilson v. Town of St. Francisville (1996)

Reno v. Bossier Parish (1995)

Knight v. McKeithen (1994)

Maryland

Caroline County NAACP v. Town of Federalsburg (2023)

NAACP v. Baltimore County (2022)

Cane v. Worcester County (1994)

Mississippi

Thomas v. Bryant (2019)

Fairley v. Hattiesburg (2014)

Boddie v. Cleveland School District (2010)

Fairley v. Hattiesburg (2008)

Boddie v. Cleveland (2003)

Jamison v. City of Tupelo (2006)

Smith v. Clark (2002)

August 15, 2023

NAACP v. Fordice (1999)
Addy v Newton County (1995)
Ewing v. Monroe County (1995)
Gunn v. Chickasaw County (1995)
Nichols v. Okolona (1995)

Montana

Old Person v. Brown (on remand) (2001)
Old Person v. Cooney (1998)

Missouri

Missouri NAACP v. Ferguson-Florissant School District (2016)

Nebraska

Stabler v. Thurston County (1995)

New York

NAACP v. East Ramapo Central School District (2020)
Pope v. County of Albany (2015)
Arbor Hills Concerned Citizens v. Albany County (2003)

Ohio

A. Philip Randolph Institute, et al. v. Ryan (2019)

South Carolina

Smith v. Beasley (1996)

South Dakota

Bone Shirt v. Hazeltine (2004)
Cottier v. City of Martin (2004)

Tennessee

Cousins v. McWherter (1994)
Rural West Tennessee African American Affairs Council v. McWherter (1993)

Texas

Jayla Allen v. Waller County, Texas
Dickinson Branch NAACP v. Galveston County (2023)

Utah

Navajo Nation v. San Juan County (2017), brief testimony –11 declarations, 2 depositions

Virginia

Smith v. Brunswick County (1991)
Henderson v. Richmond County (1988)
McDaniel v. Mehfoud (1988)
White v. Daniel (1989)

August 15, 2023

Wyoming

Large v. Fremont County (2007)

Other Trial Testimony in Federal Cases Since 2011

Alabama

Stout v. Jefferson County Board of Education (2016)

Louisiana

Thomas v. School Board of St. Martin Parish (2021, 2022, and 2023)

North Carolina

NARSOL v. Stein (2021)

In addition, I have filed expert declarations or been deposed in the following cases that did not require trial testimony. The dates listed indicate the deposition date or date of last declaration or supplemental declaration:

Alabama

McClure v. Jefferson County (2023)

People First of Alabama v. Merrill (2020), Covid-19 demographics only

Alabama State NAACP v. City of Pleasant Grove (2019)

Jones v. Jefferson County Board of Education (2019)

Voketz v. City of Decatur (2018)

Arkansas

Mays v. Thurston (2020)-- Covid-19 demographics only)

Connecticut

NAACP v. Merrill (2020)

Florida

Calvin v. Jefferson County (2016)

Thompson v. Glades County (2001)

Johnson v. DeSoto County (1999)

Burton v. City of Belle Glade (1997)

Georgia

Dwight v. Kemp (2018)

Georgia NAACP et al. v. Gwinnett County, GA (2018)

Georgia State Conference NAACP et al v. Georgia (2018)

Georgia State Conference NAACP, et al. v. Fayette County (2015)

August 15, 2023

Knighton v. Dougherty County (2002)
Johnson v. Miller (1998)
Jones v. Cook County (1993)

Kentucky

Herbert v. Kentucky State Board of Elections (2013)

Louisiana

Means v. Desoto Parish (2023)
Nairne v. Ardoin (2023)
Power Coalition for Equity and Justice v. Edwards (2020), Covid-19 demographics only
Johnson v. Ardoin (2019)
NAACP v. St. Landry Parish Council (2005)
Prejean v. Foster (1998)
Rodney v. McKeithen (1993)

Maryland

Baltimore County NAACP v. Baltimore County (2022)
Benisek v. Lamone (2017)
Fletcher v. Lamone (2011)

Mississippi

Partee v. Coahoma County (2015)
Figgs v. Quitman County (2015)
West v. Natchez (2015)
Williams v. Bolivar County (2005)
Houston v. Lafayette County (2002)
Clark v. Calhoun County (on remand) (1993)
Teague v. Attala County (on remand) (1993)
Wilson v. Clarksdale (1992)
Stanfield v. Lee County (1991)

Montana

Alden v. Rosebud County (2000)

North Carolina

Town of Ahoskie (1990)
Lewis v. Alamance County (1991)
Gause v. Brunswick County (1992)
Webster v. Person County (1992)

Rhode Island

Davidson v. City of Cranston (2015)

South Carolina

Thomas v. Andino (2020), Covid-19 demographics only
Vander Linden v. Campbell (1996)

August 15, 2023

South Dakota

Kirkie v. Buffalo County (2004

Emery v. Hunt (1999)

Tennessee

NAACP v. Frost, et al. (2003)

Virginia

Moon v. Beyer (1990)

Washington

Montes v. City of Yakima (2014)

Glatt v. City of Pasco (2016)

###

EXHIBIT B

PTX-001-092

Exhibit B – Methodology and Sources

1. In the preparation of this report, I analyzed population data from the 1990 to 2020 Decennial Census. In addition, I reported and analyzed socioeconomic data from the 1-year 2021 American Community Survey (“ACS”) and the 5-year 2015-2019 ACS published by the U.S. Census Bureau.
2. For my redistricting analysis, I used a geographic information system (GIS) software package called *Maptitude for Redistricting*, developed by the Caliper Corporation. This software is deployed by many local and state governing bodies across the country for redistricting and other types of demographic analysis.
3. The geographic boundary files that I used with *Maptitude* are created from the U.S. Census 2020 TIGER (Topologically Integrated Geographic Encoding and Referencing) files and versions from earlier decades (1990, 2000, and 2010).
4. I also used a geographic file depicting 1990 precinct boundaries prepared by the Mississippi Automated Resource Information System, https://www.maris.state.ms.us/HTML/DATA/data_Political/1990VotingPrecincts.html#gsc.

5. I used population data from the U. S. Census 1990, 2000, 2010, and 2020 PL 94-171 data files. The PL 94-171 dataset is published in electronic format and is the complete count population file designed by the Census Bureau for use in legislative redistricting. The file contains basic race and ethnicity data on the total population and voting-age population found in units of Census geography such as states, counties, municipalities, townships, reservations, school districts, census tracts, census block groups, precincts (called voting districts or “VTDs” by the Census Bureau) and census blocks.

6. I developed the illustrative plans presented in this report using *Maptitude for Redistricting*. The *Maptitude for Redistricting* software processes the TIGER files to produce a map for display on a computer screen. The software also merges demographic data from the PL 94-171 files to match the relevant decennial Census geography.

###

EXHIBIT C-1

PTX-001-095

Selected Socio-Economic Data

Mississippi

Any Part African American vis-à-vis NH White

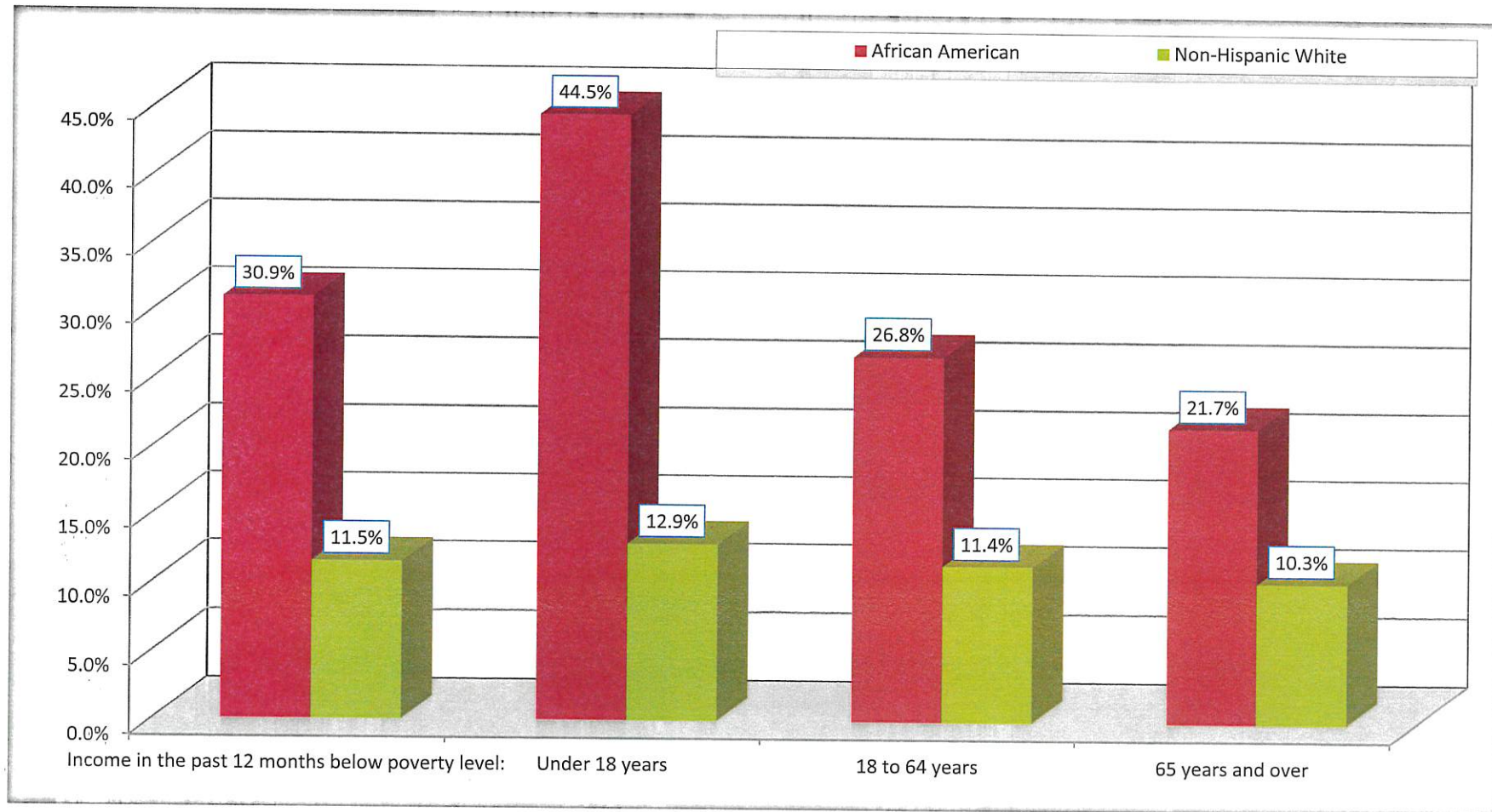
Data Set: 2021 American Community Survey 1-Year Estimates

29-Sep-22

PTX-001-096

Population Below Poverty in the Past 12 Months

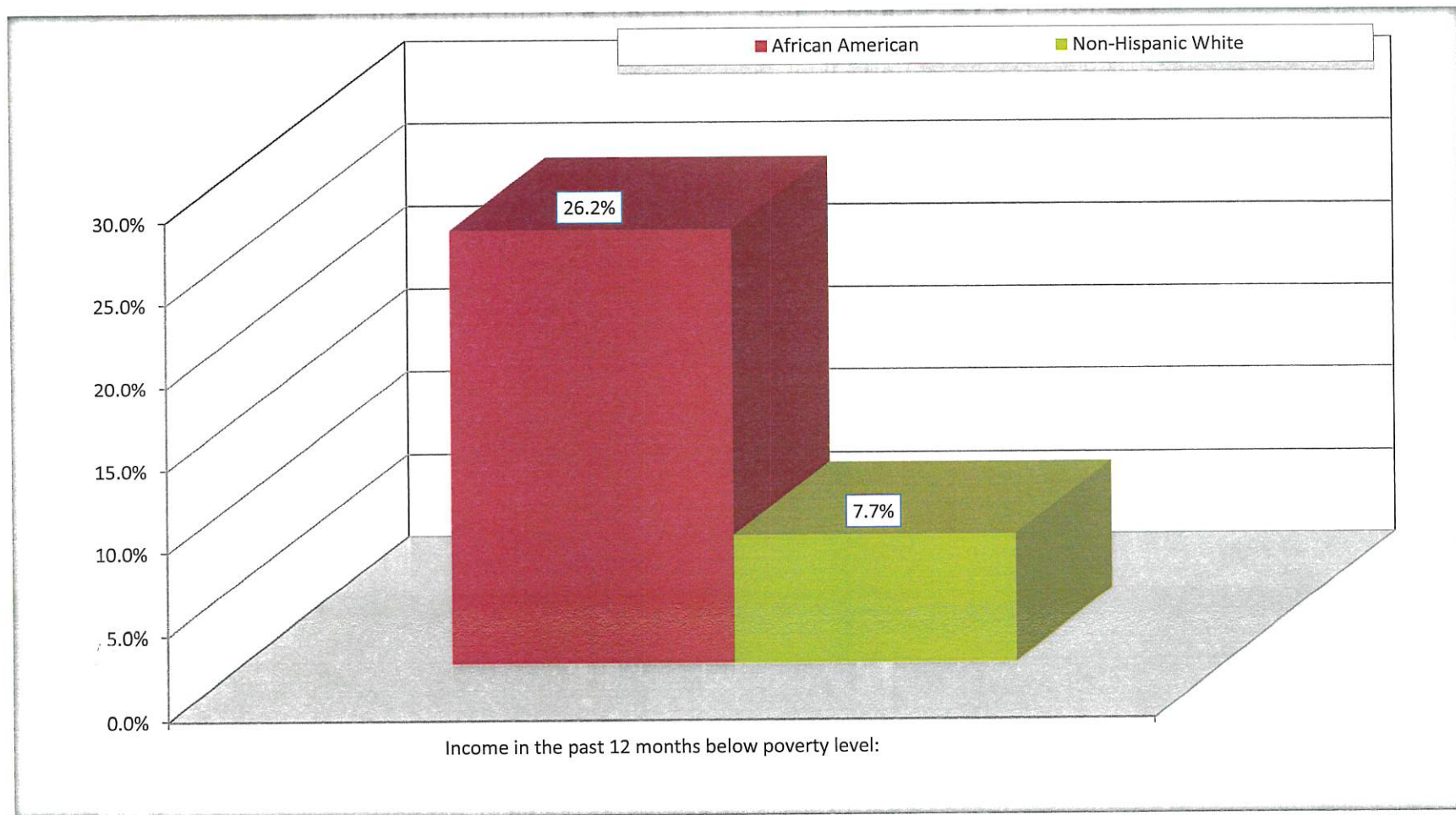
Mississippi



Source: S0201 SELECTED POPULATION PROFILE
Data Set: 2021 American Community Survey 1-Year Estimates

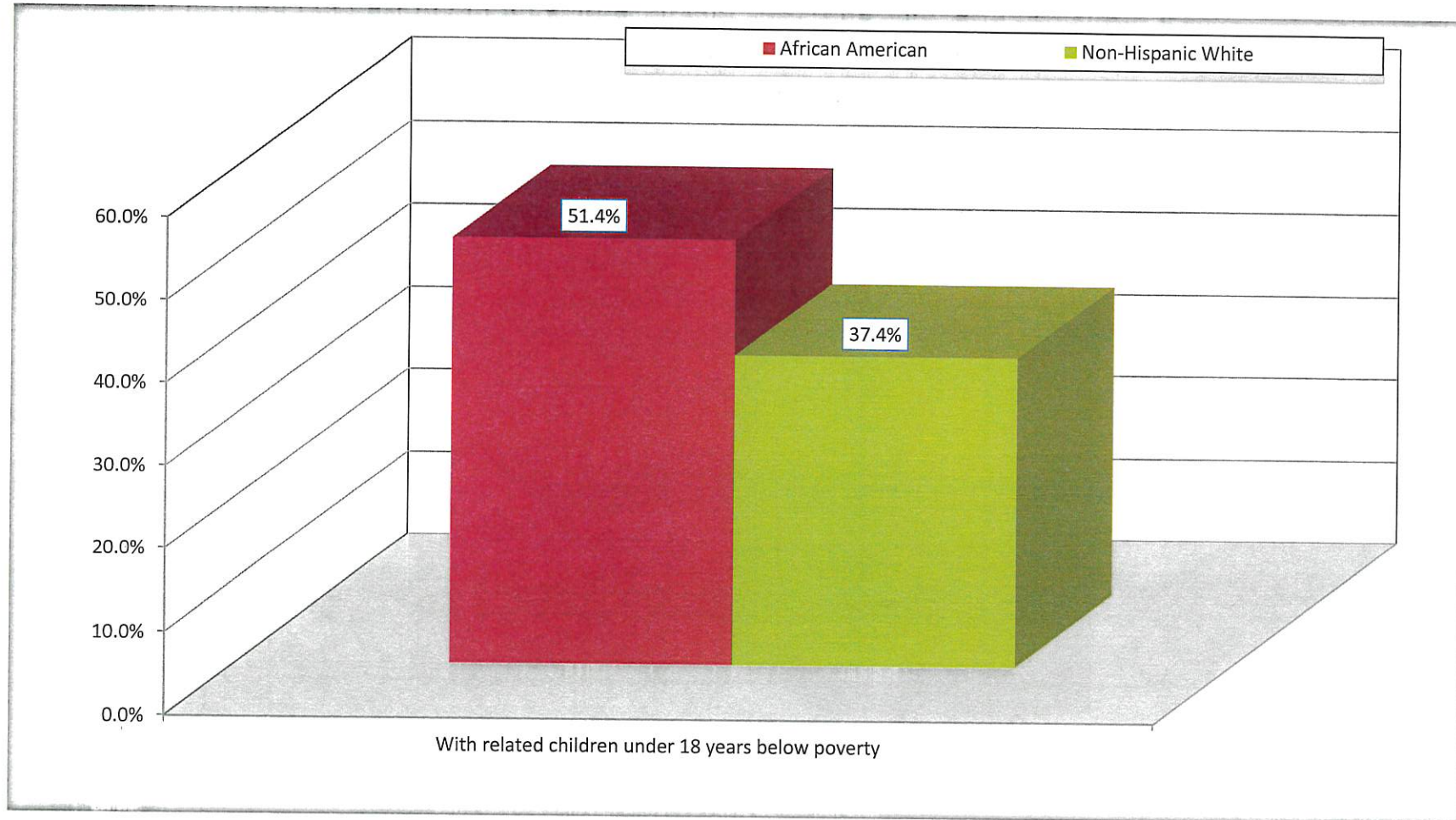
Family Households Below Poverty in the Past 12 Months

Mississippi



Source: S0201 SELECTED POPULATION PROFILE
Data Set: 2021 American Community Survey 1-Year Estimates

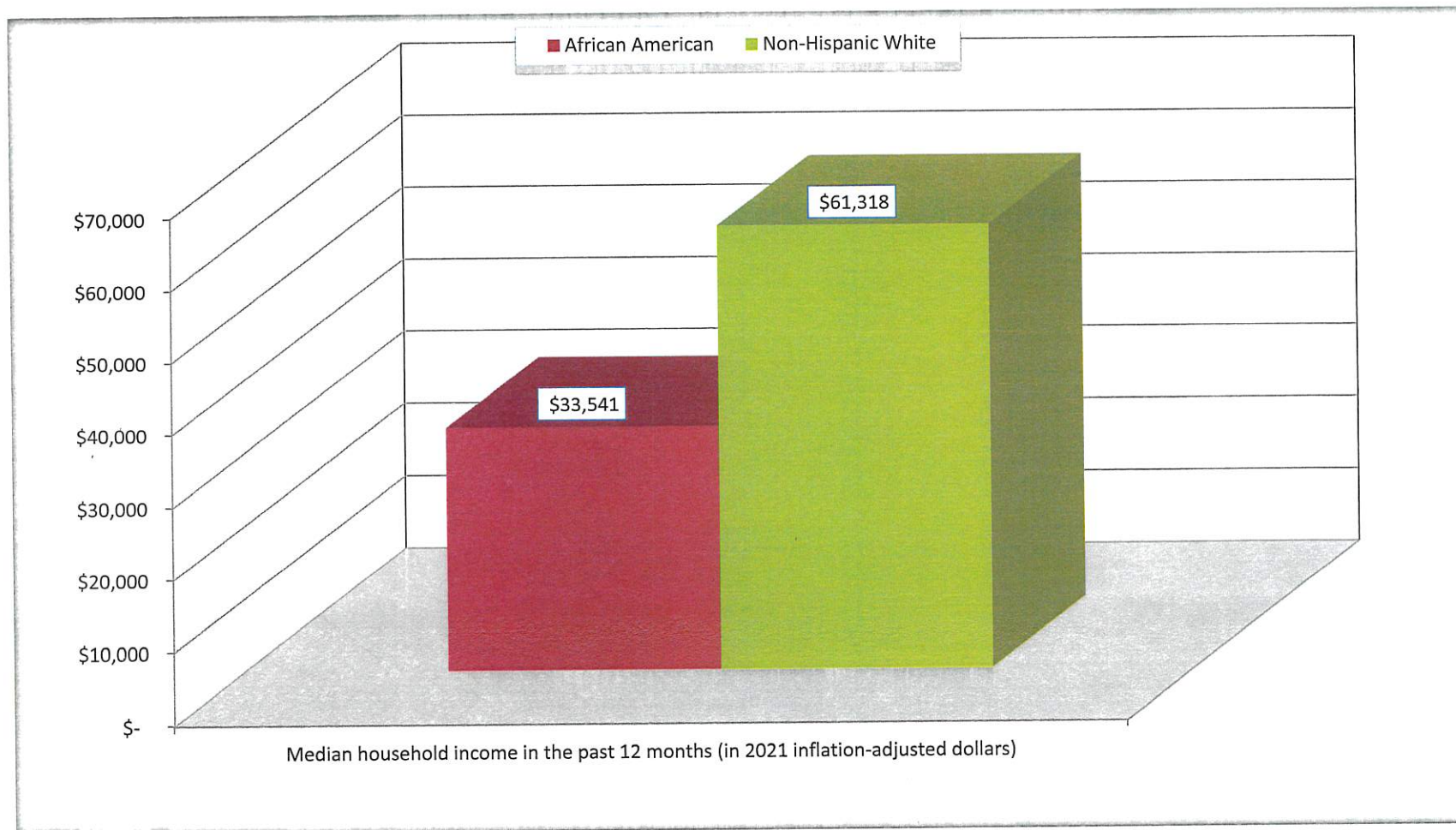
Female-headed Households with Related Children Below Poverty in the Past 12 Months **Mississippi**



Source: S0201 SELECTED POPULATION PROFILE
Data Set: 2021 American Community Survey 1-Year Estimates

Median Household Income in the Past 12 Months

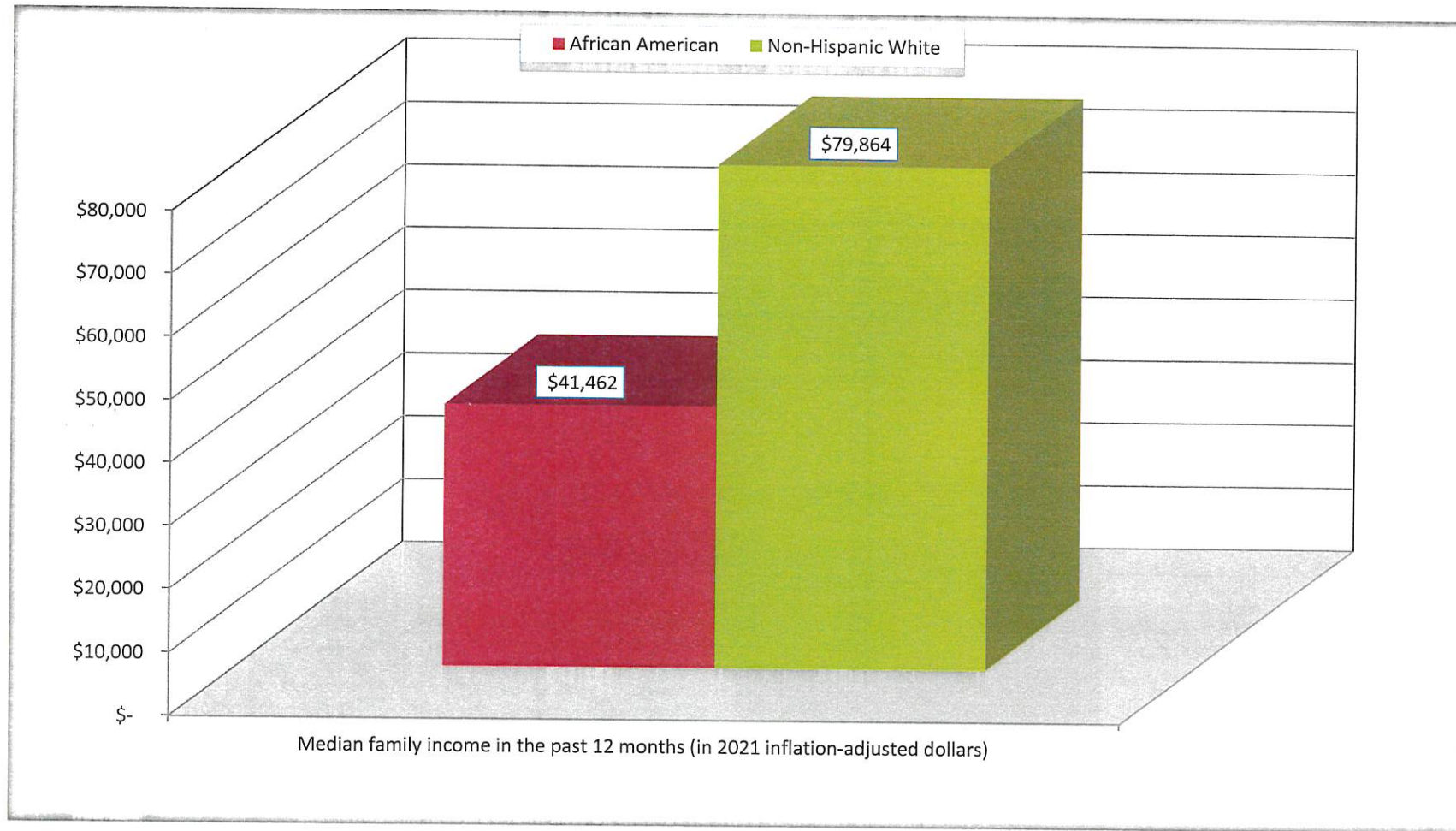
Mississippi



Source: S0201 SELECTED POPULATION PROFILE
Data Set: 2021 American Community Survey 1-Year Estimates

Median Family Income in the Past 12 Months

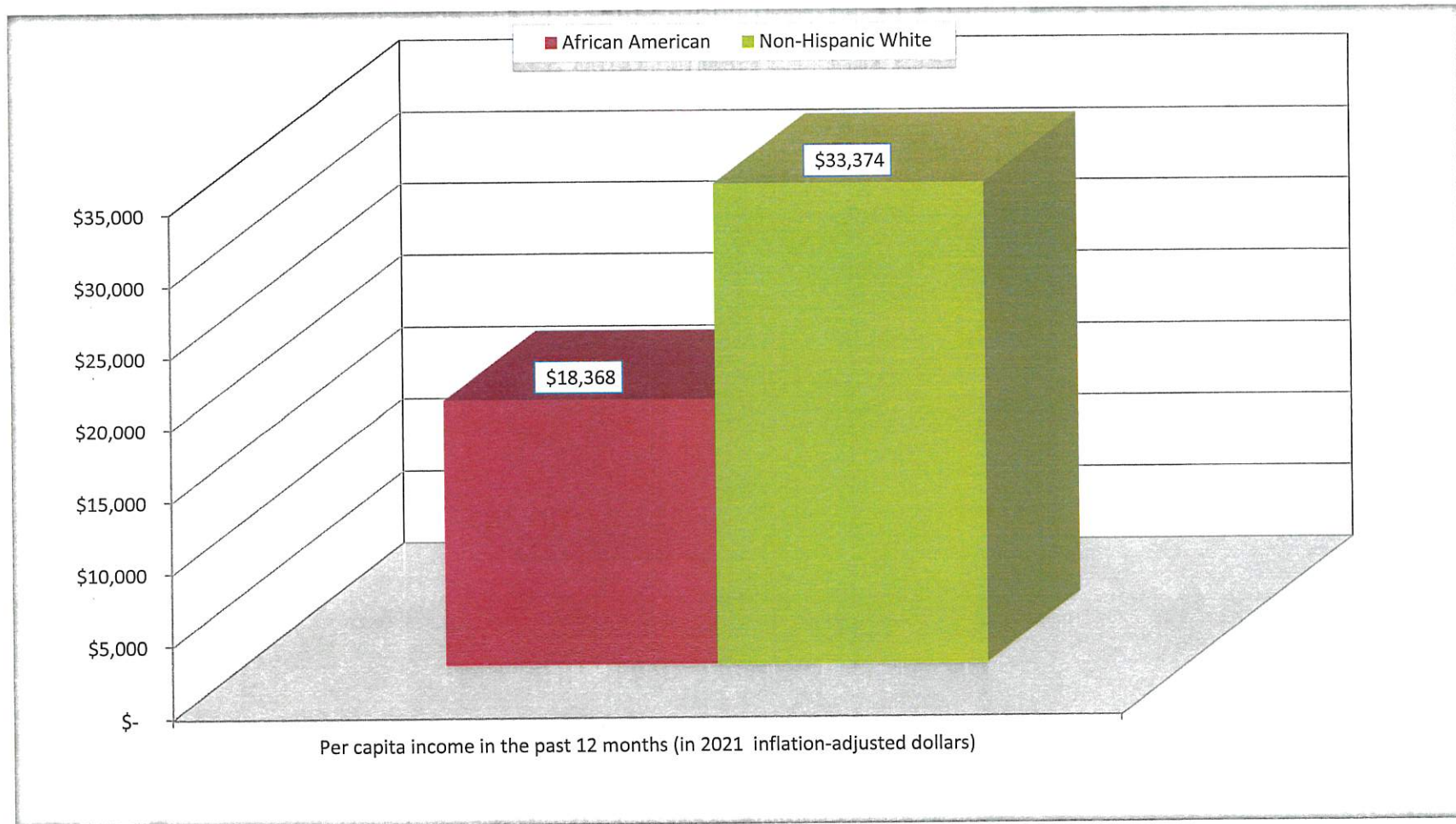
Mississippi



Source: S0201 SELECTED POPULATION PROFILE
Data Set: 2021 American Community Survey 1-Year Estimates

Per capita Income in the Past 12 Months

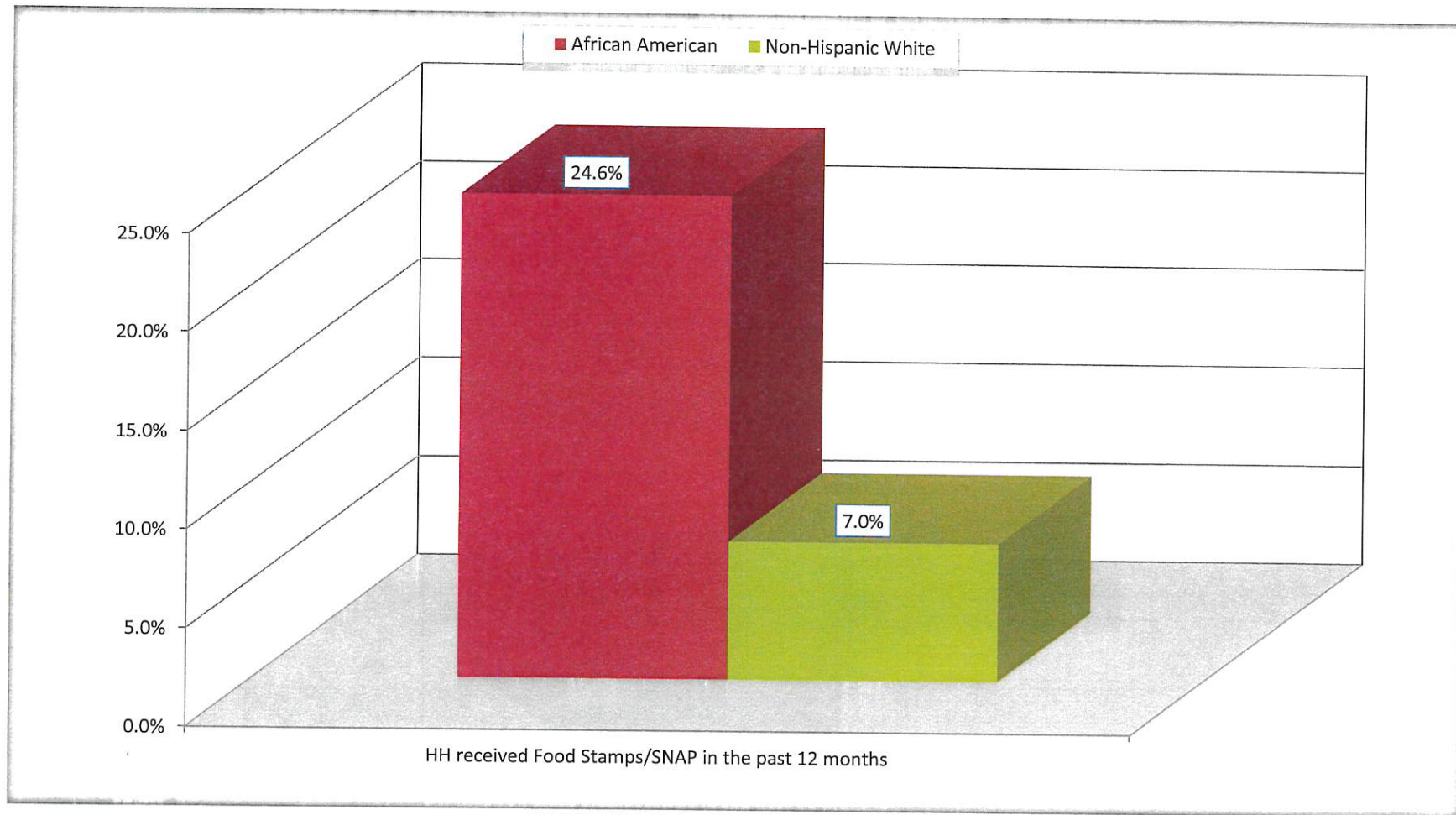
Mississippi



Source: S0201 SELECTED POPULATION PROFILE
Data Set: 2021 American Community Survey 1-Year Estimates

Receipt of Food Stamps/SNAP in the Past 12 Months by Household

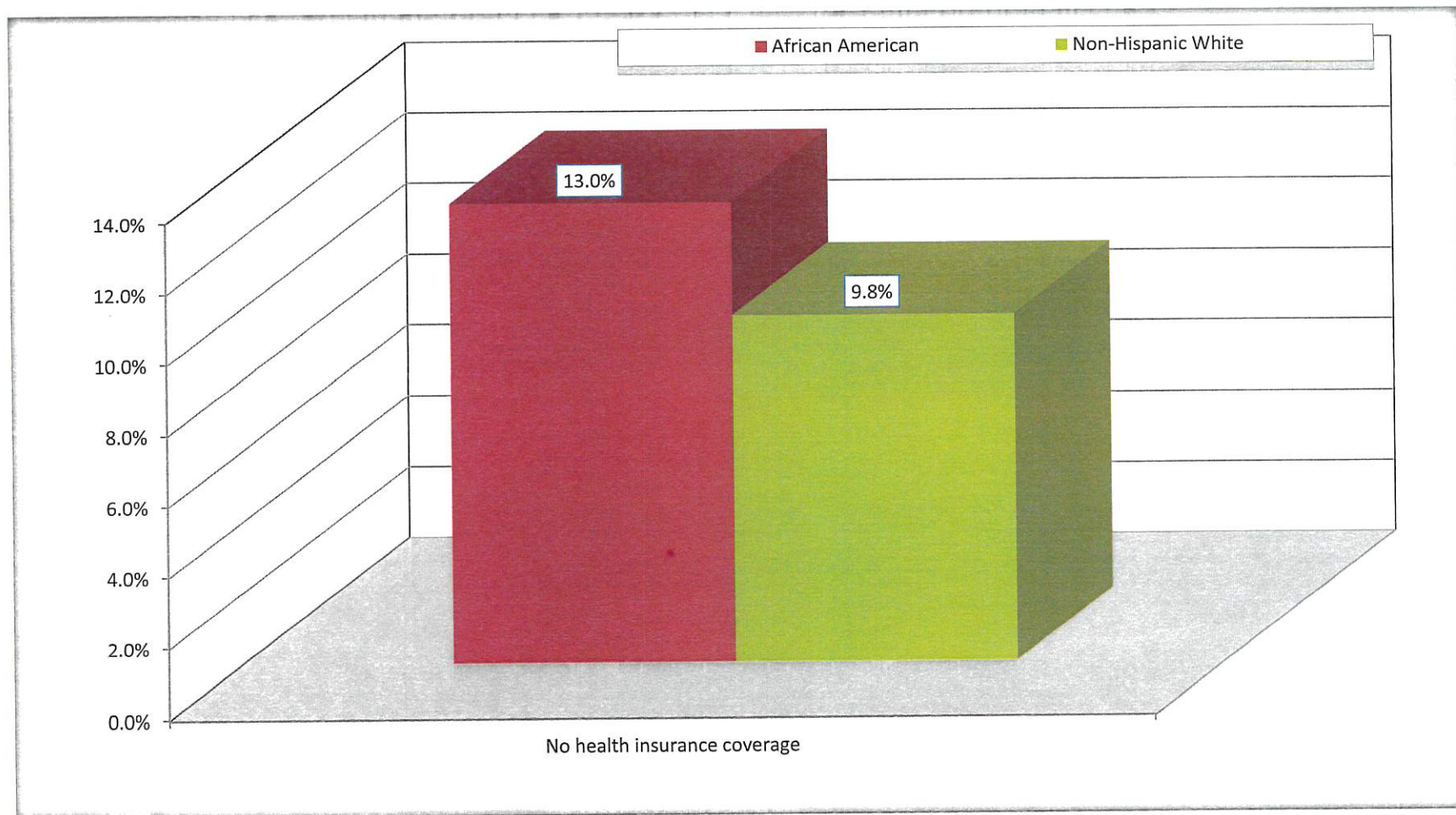
Mississippi



Source: S0201 SELECTED POPULATION PROFILE
Data Set: 2021 American Community Survey 1-Year Estimates

Lack of Health Insurance Coverage -- Civilian Noninstitutionalized Population

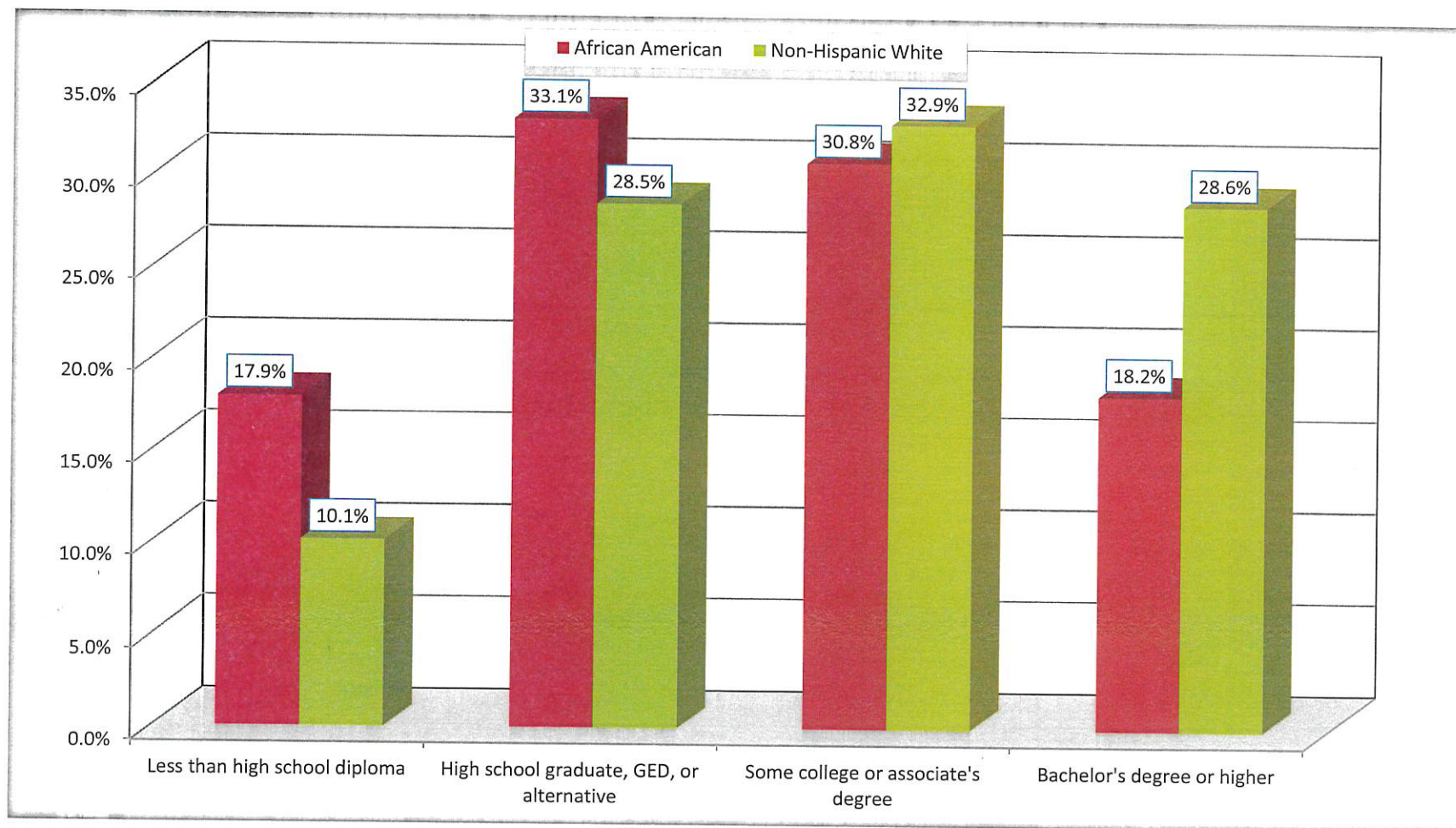
Mississippi



Source: S0201 SELECTED POPULATION PROFILE
Data Set: 2021 American Community Survey 1-Year Estimates

Educational Attainment for the Population 25 Years and Older

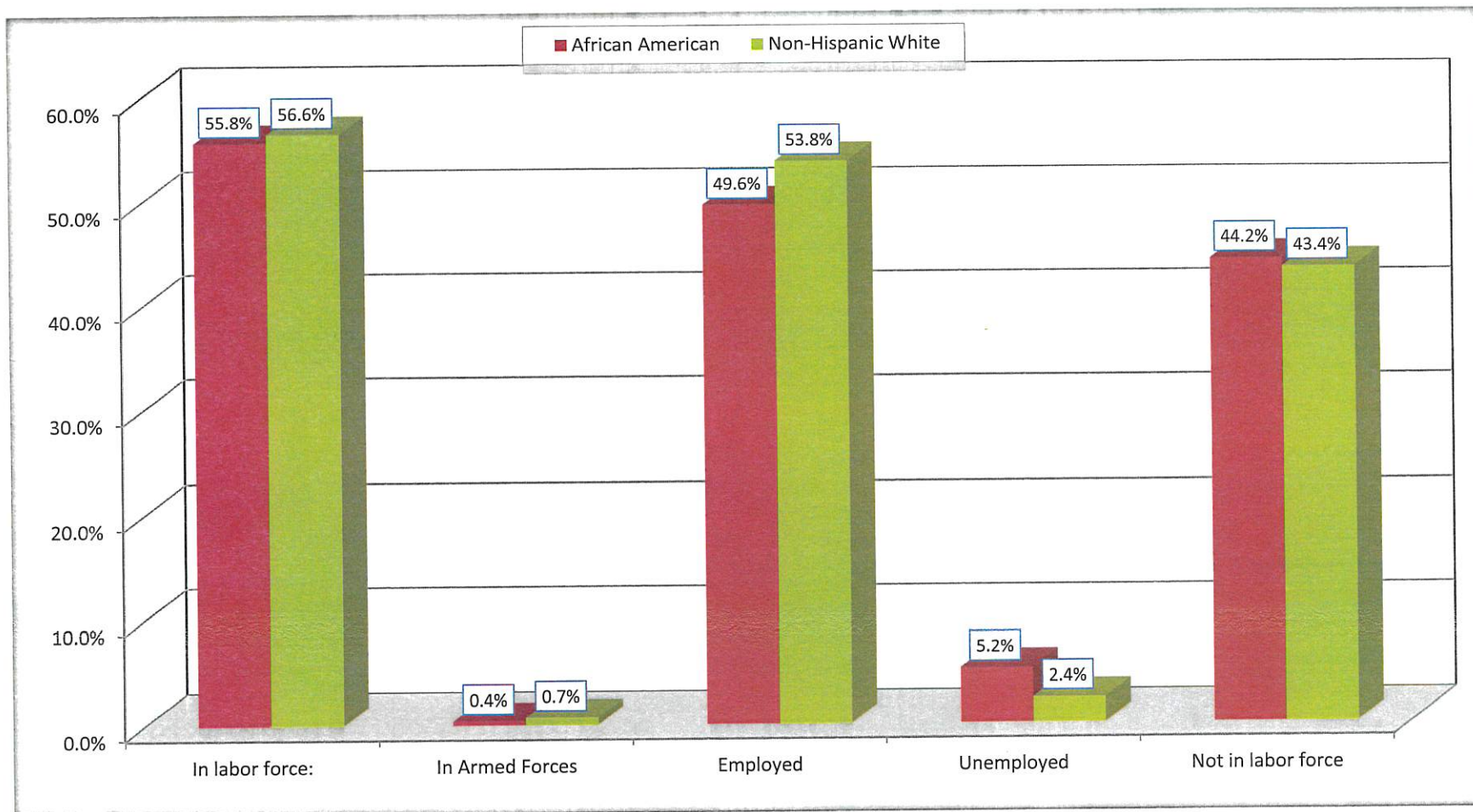
Mississippi



Source: S0201 SELECTED POPULATION PROFILE
Data Set: 2021 American Community Survey 1-Year Estimates

Employment Status for the Population 16 years and over

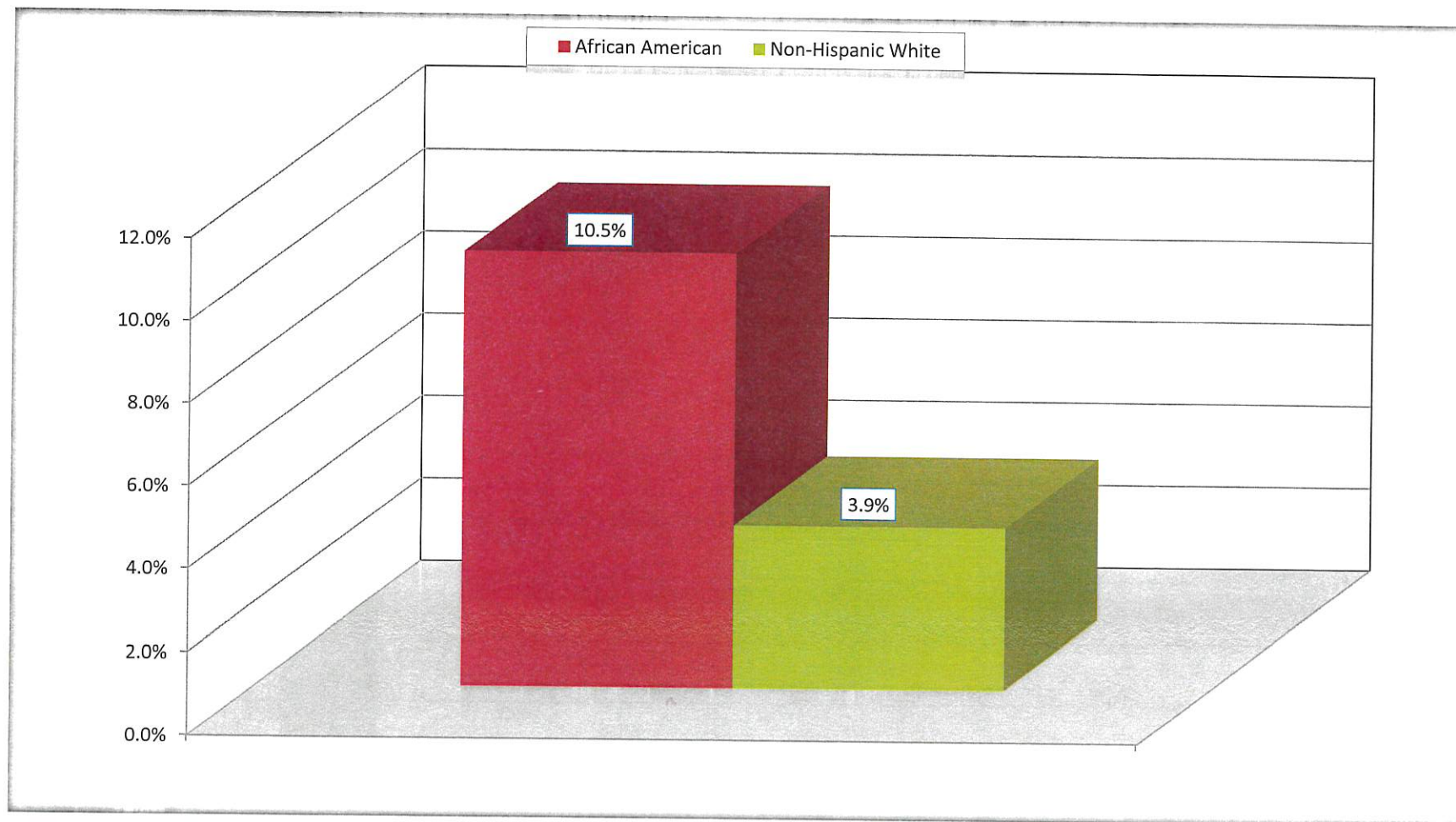
Mississippi



Source: S0201 SELECTED POPULATION PROFILE
Data Set: 2021 American Community Survey 1-Year Estimates

Unemployment (Civilian Labor Force -- Ages 16 and Over)

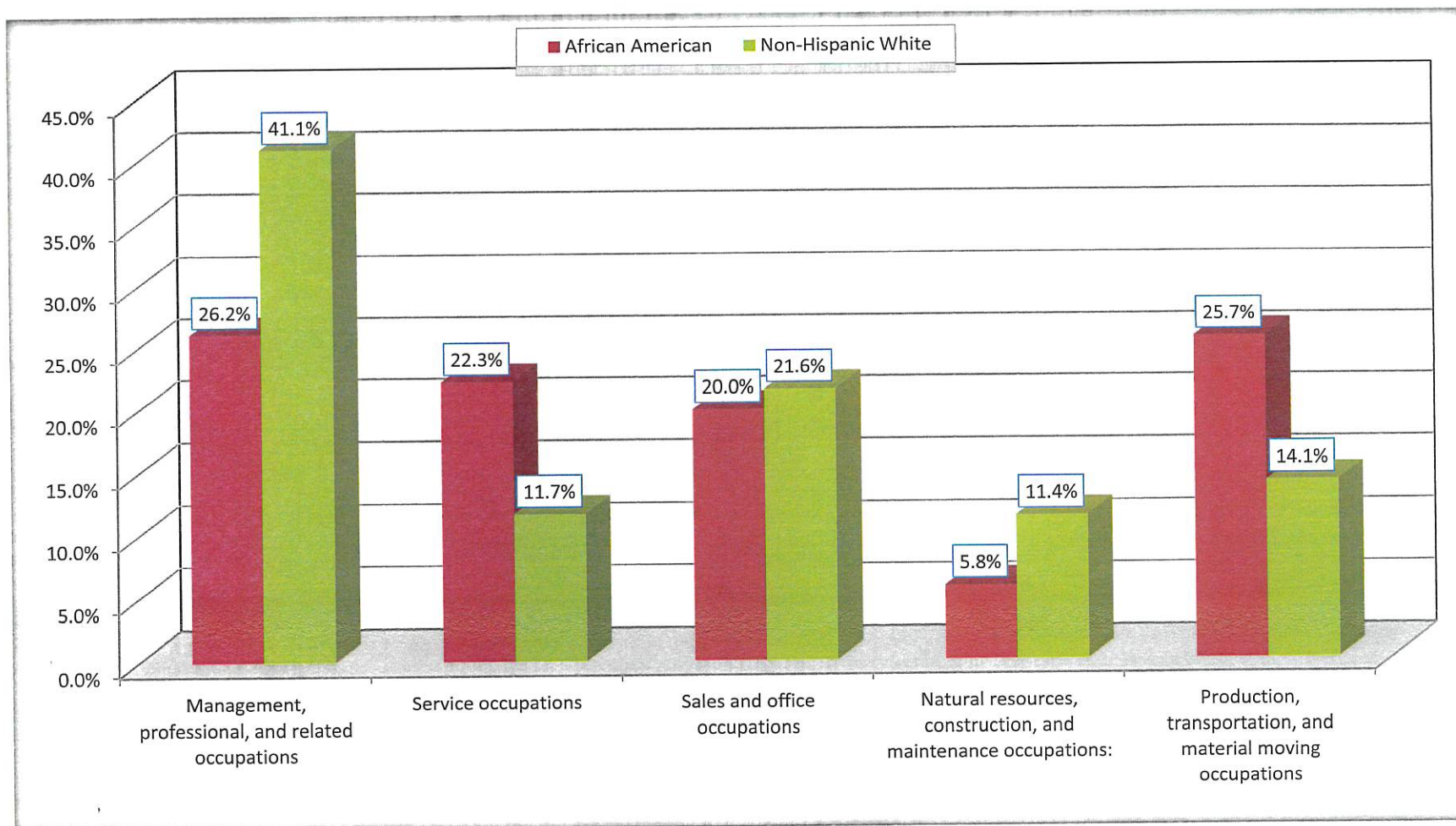
Mississippi



Source: S0201 SELECTED POPULATION PROFILE
Data Set: 2021 American Community Survey 1-Year Estimates

Occupation for the Civilian Employed 16 Years and Over Population

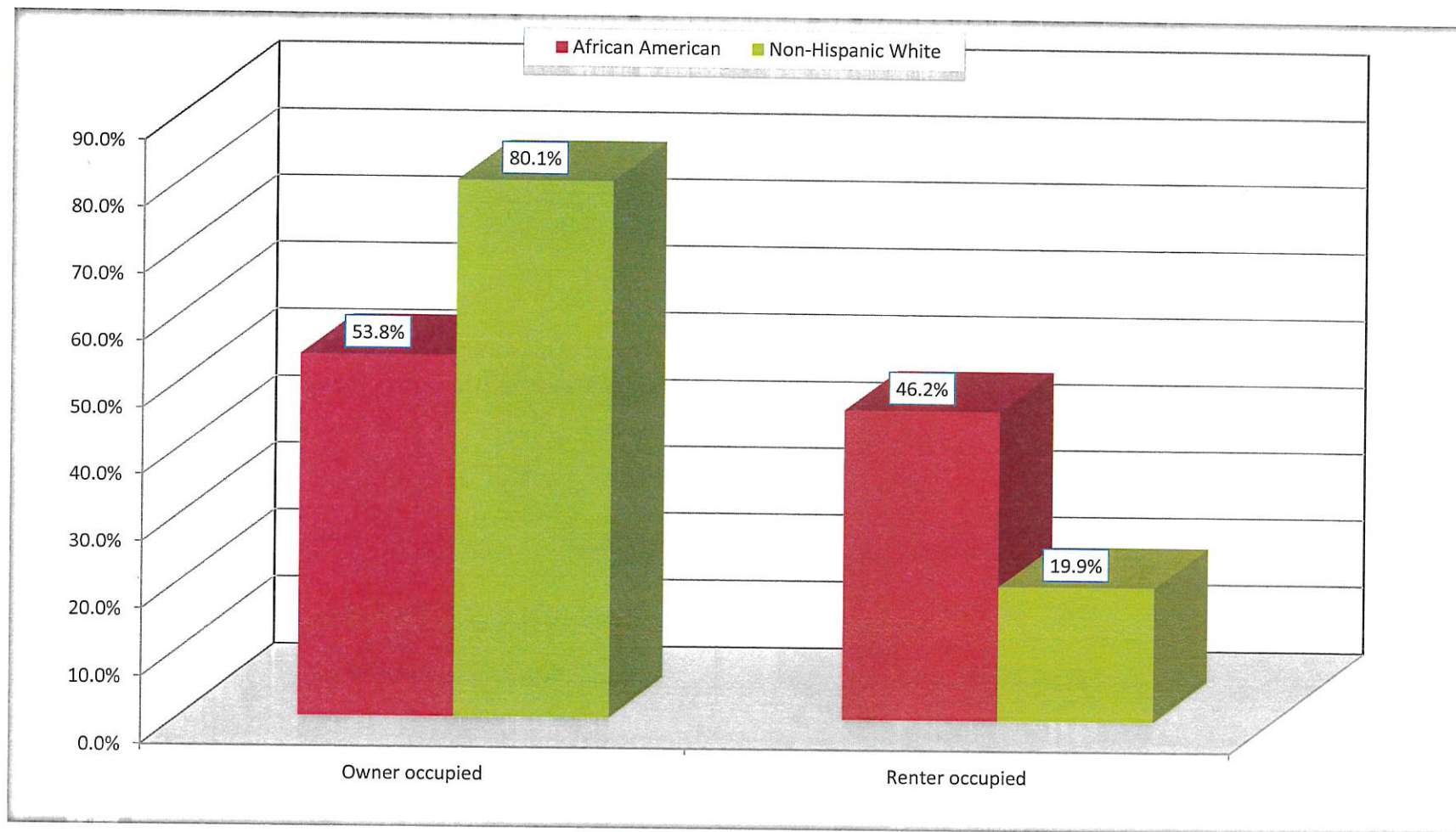
Mississippi



Source: S0201 SELECTED POPULATION PROFILE
Data Set: 2021 American Community Survey 1-Year Estimates

Home Owners and Renters by Household

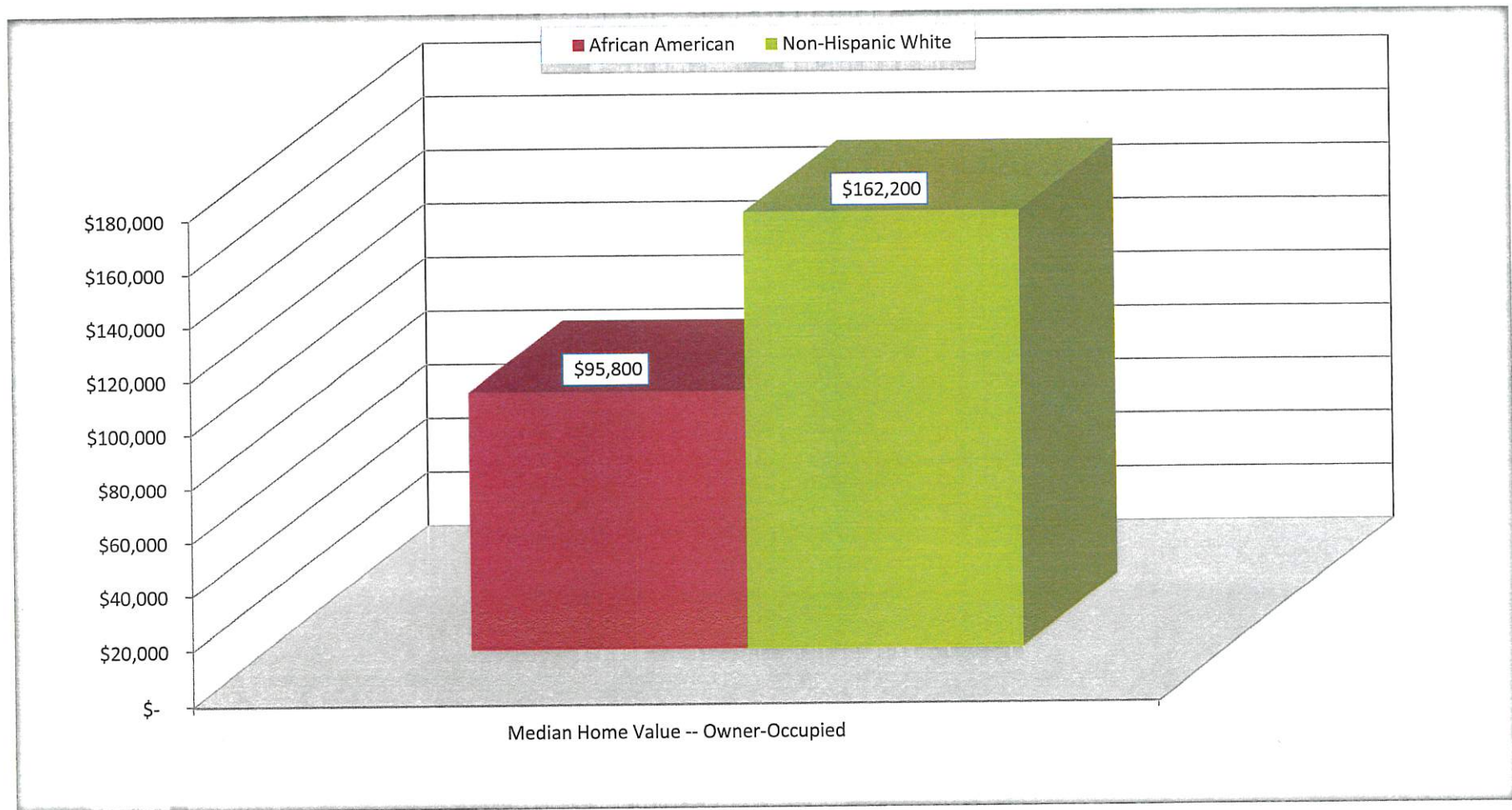
Mississippi



Source: S0201 SELECTED POPULATION PROFILE
Data Set: 2021 American Community Survey 1-Year Estimates

Median Home Value -- Owner-Occupied

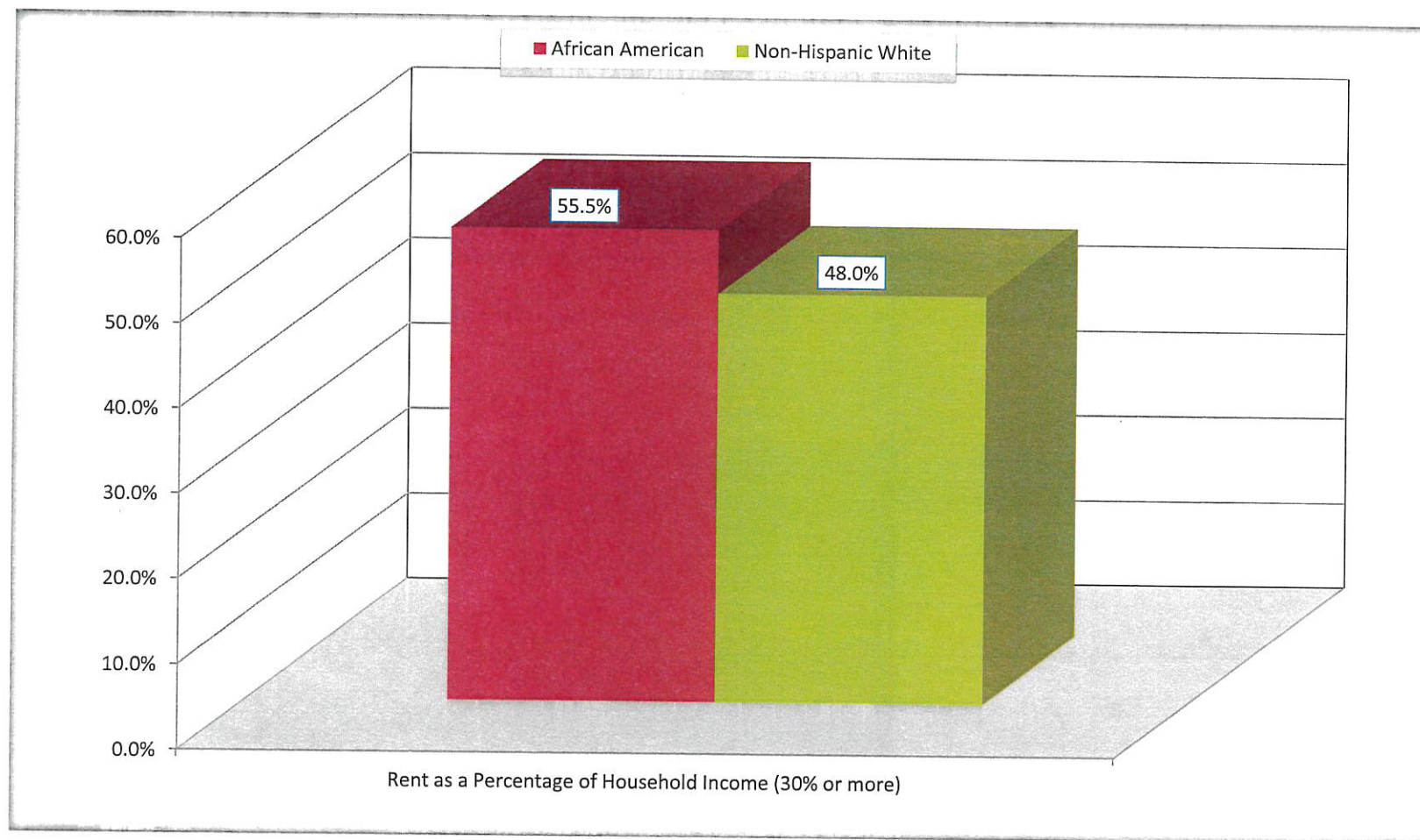
Mississippi



Source: S0201 SELECTED POPULATION PROFILE
Data Set: 2021 American Community Survey 1-Year Estimates

Rent as a Percentage of Household Income (30% or more) -- Renter-Occupied

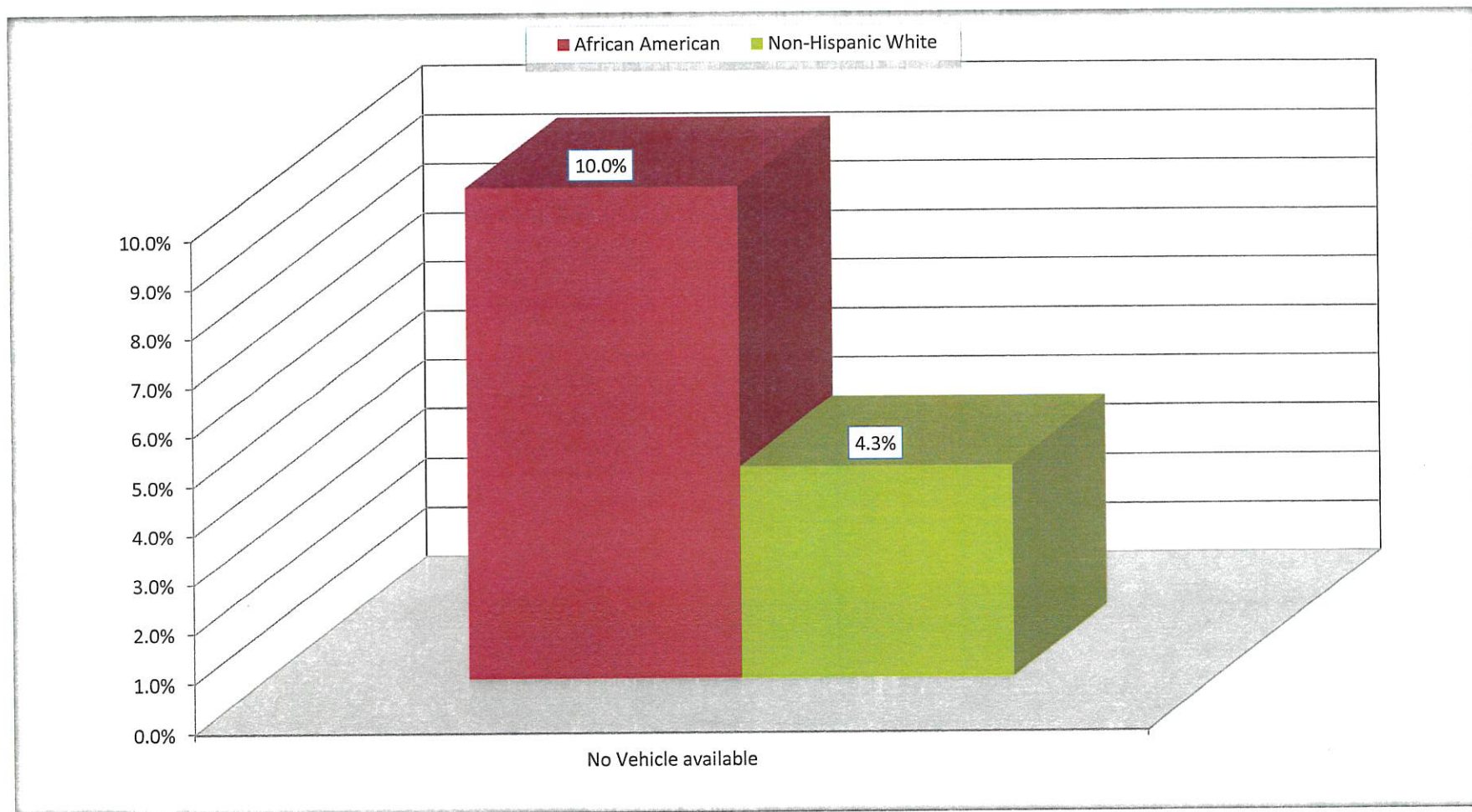
Mississippi



Source: S0201 SELECTED POPULATION PROFILE
Data Set: 2021 American Community Survey 1-Year Estimates

No Vehicles Available by Household

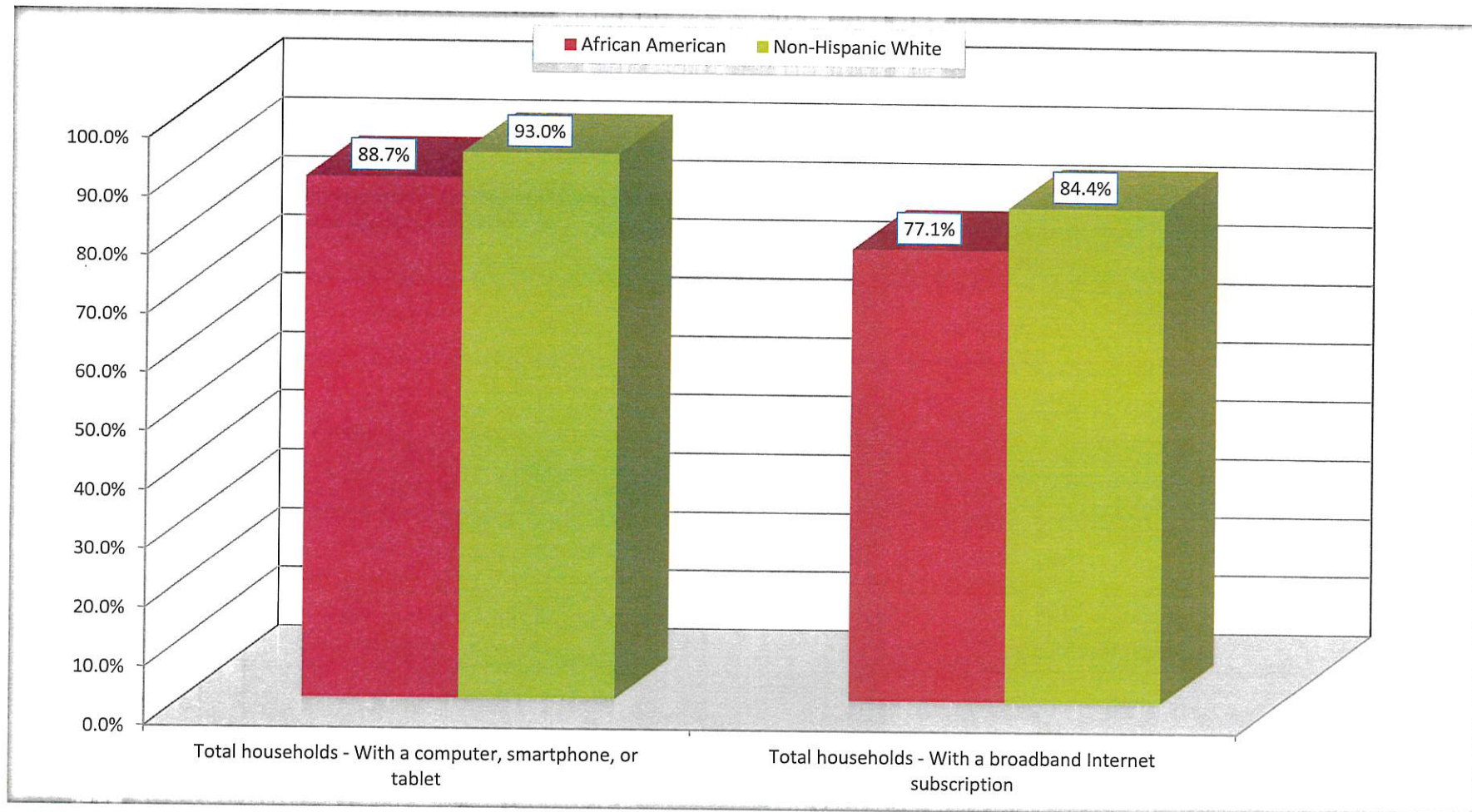
Mississippi



Source: S0201 SELECTED POPULATION PROFILE
Data Set: 2021 American Community Survey 1-Year Estimates

Computers and Internet Use

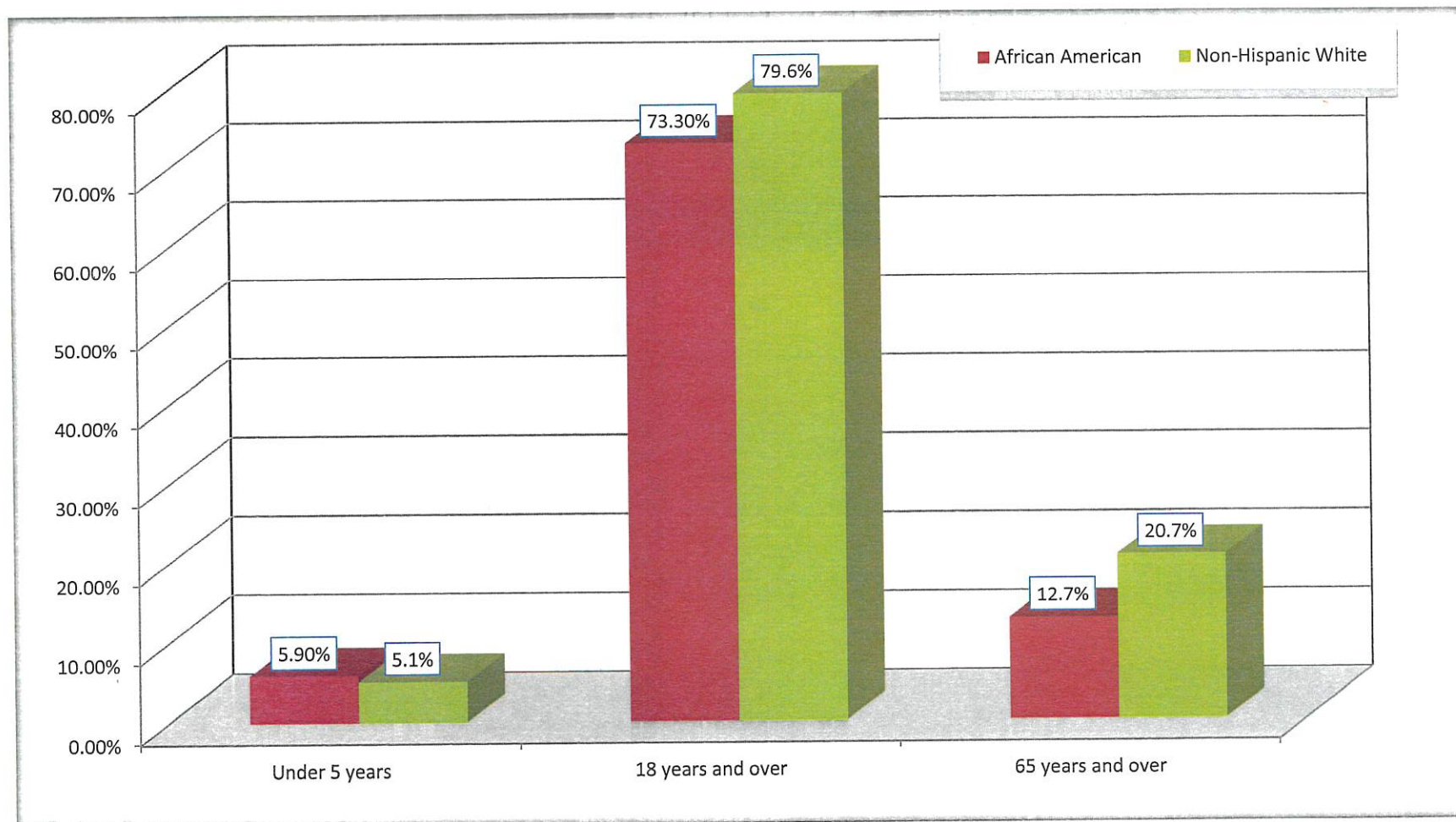
Mississippi



Source: S0201 SELECTED POPULATION PROFILE
Data Set: 2021 American Community Survey 1-Year Estimates

Population by Age

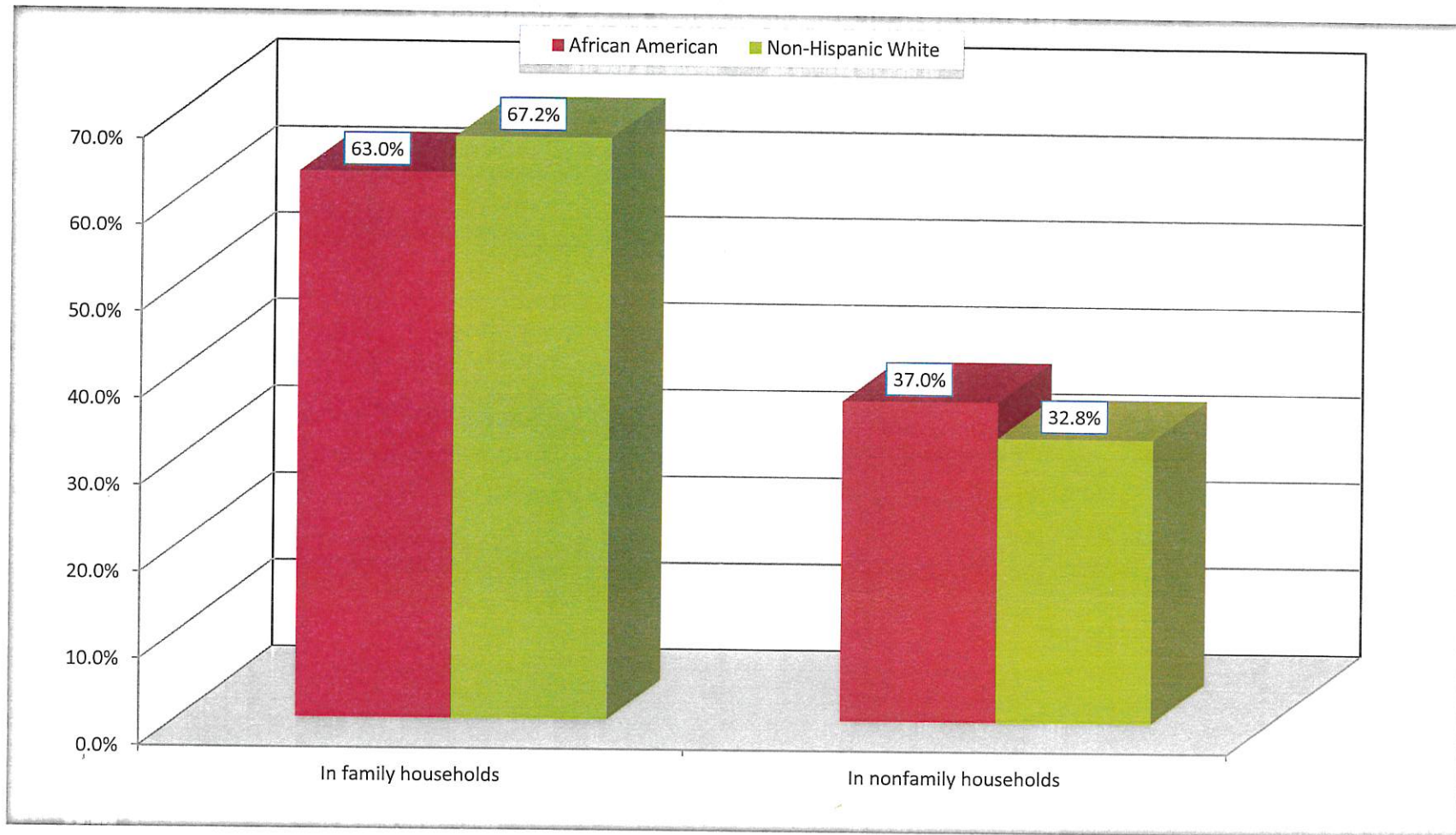
Mississippi



Source: S0201 SELECTED POPULATION PROFILE
Data Set: 2021 American Community Survey 1-Year Estimates

Household Type for Population in Households

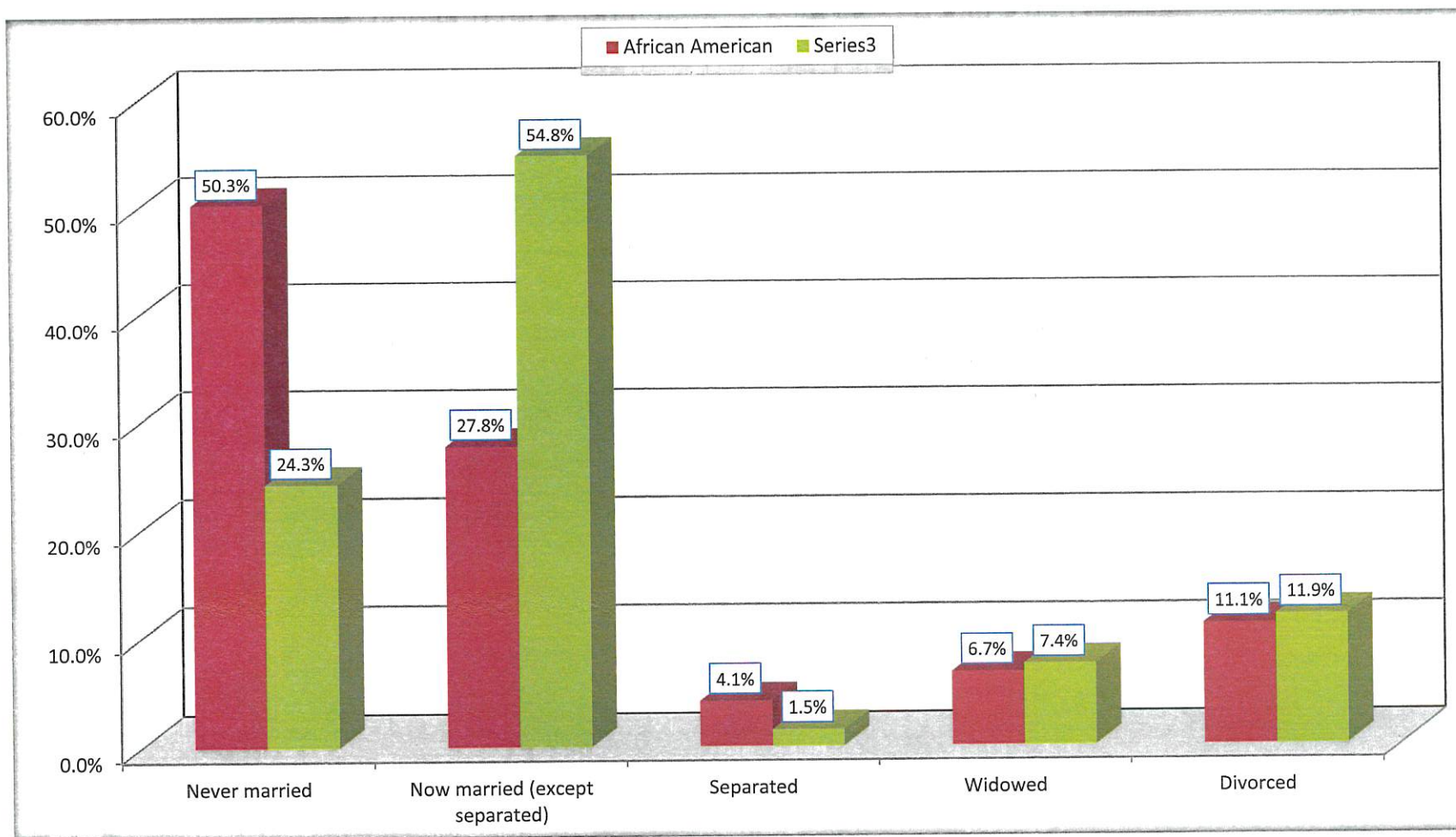
Mississippi



Source: S0201 SELECTED POPULATION PROFILE
Data Set: 2021 American Community Survey 1-Year Estimates

Marital Status for the Population 15 Years and Over

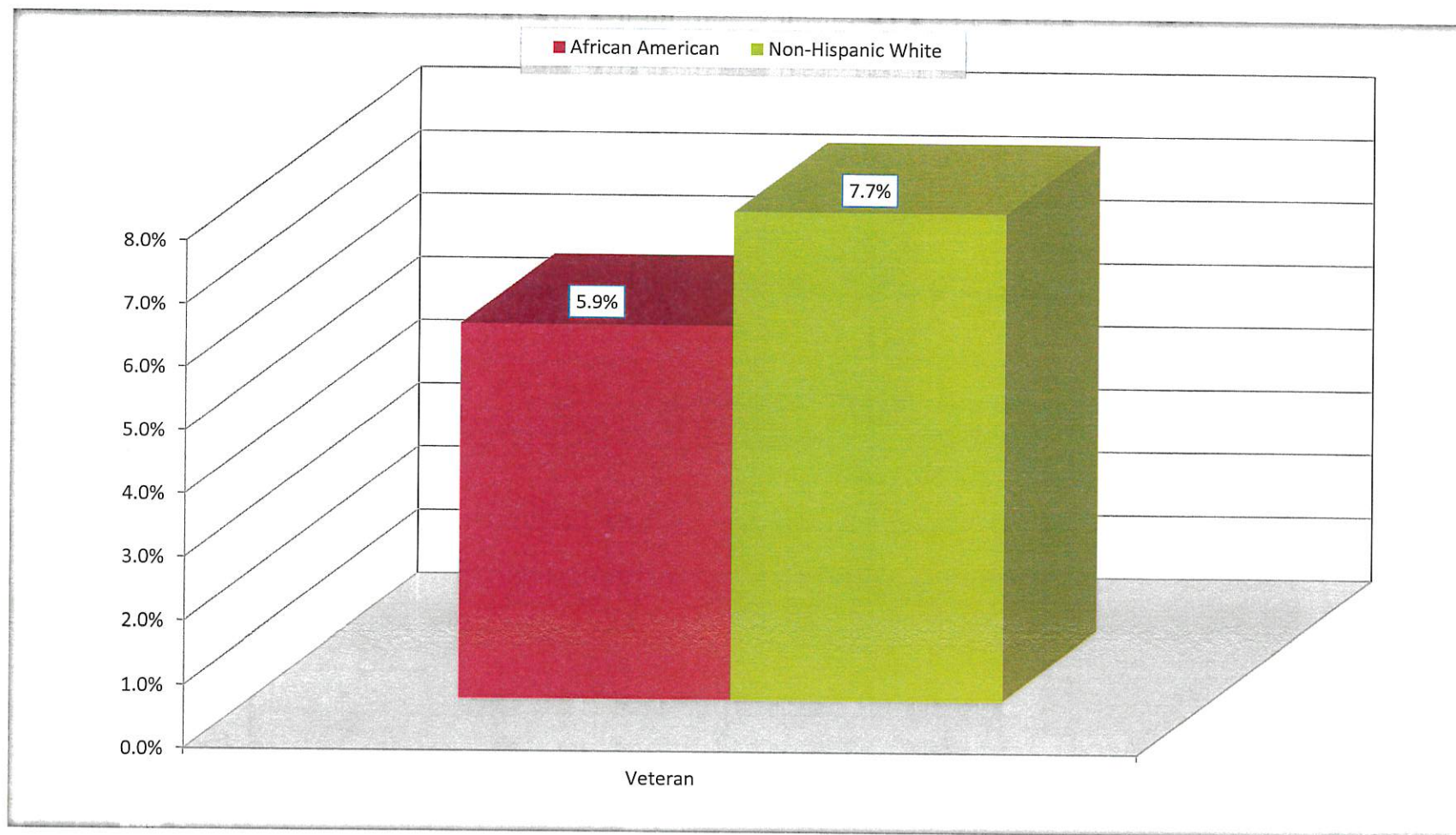
Mississippi



Source: S0201 SELECTED POPULATION PROFILE
Data Set: 2021 American Community Survey 1-Year Estimates

Veterans in the Civilian Population 18 Years and Over

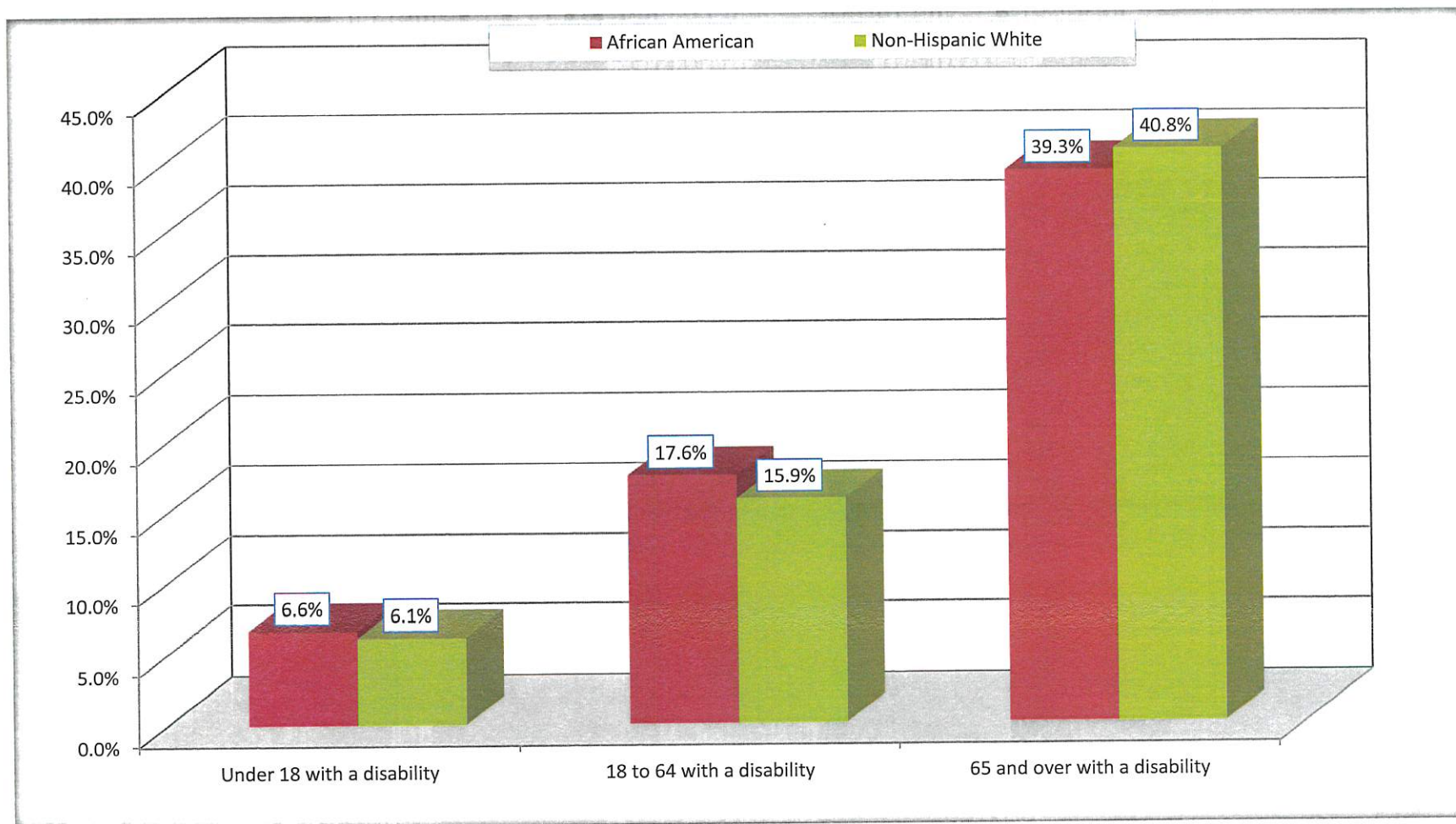
Mississippi



Source: S0201 SELECTED POPULATION PROFILE
Data Set: 2021 American Community Survey 1-Year Estimates

Disability by Age -- Civilian Noninstitutionalized Population

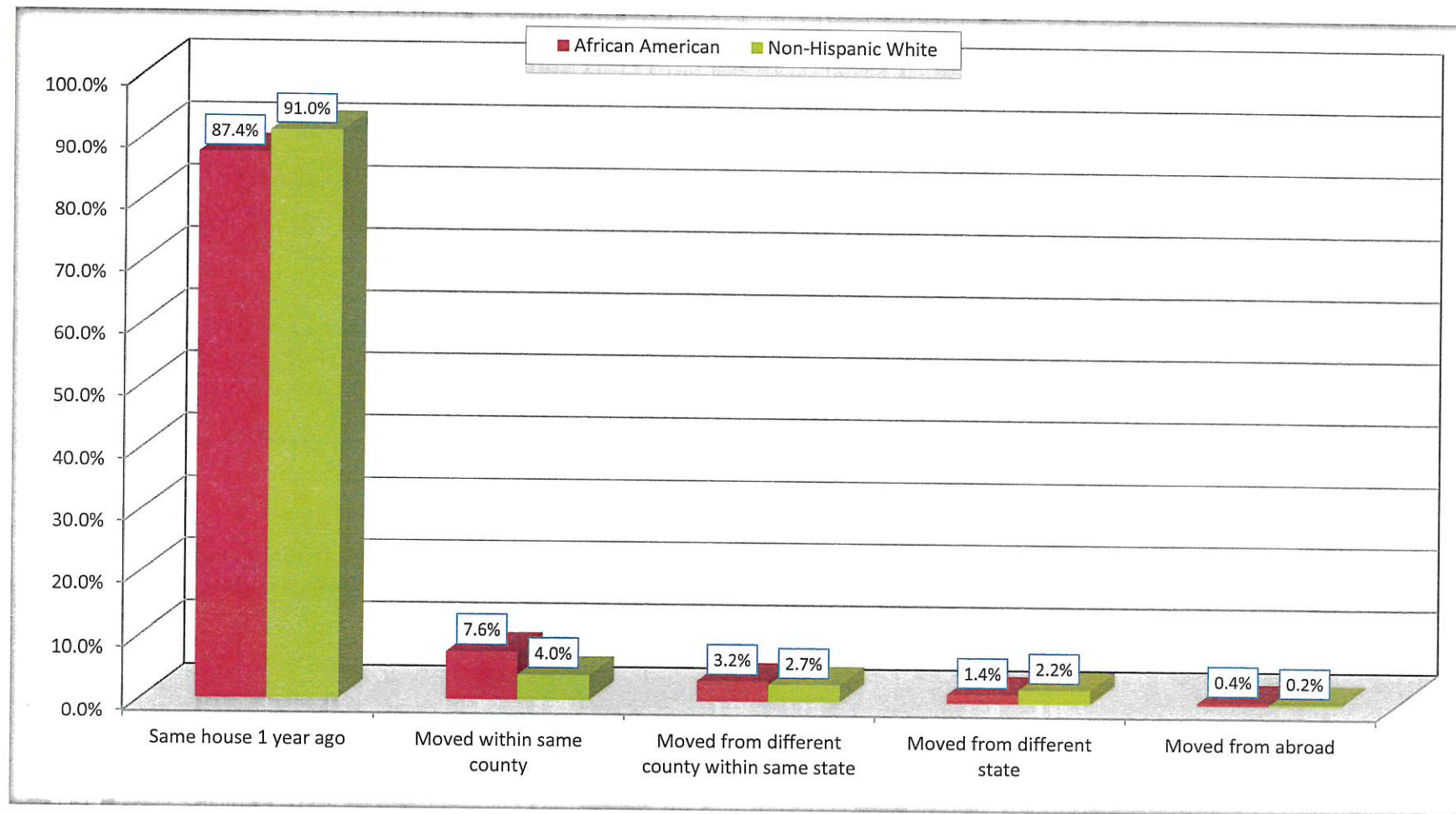
Mississippi



Source: S0201 SELECTED POPULATION PROFILE
Data Set: 2021 American Community Survey 1-Year Estimates

Geographical Mobility in the Past Year (Population 1 Year and Over)

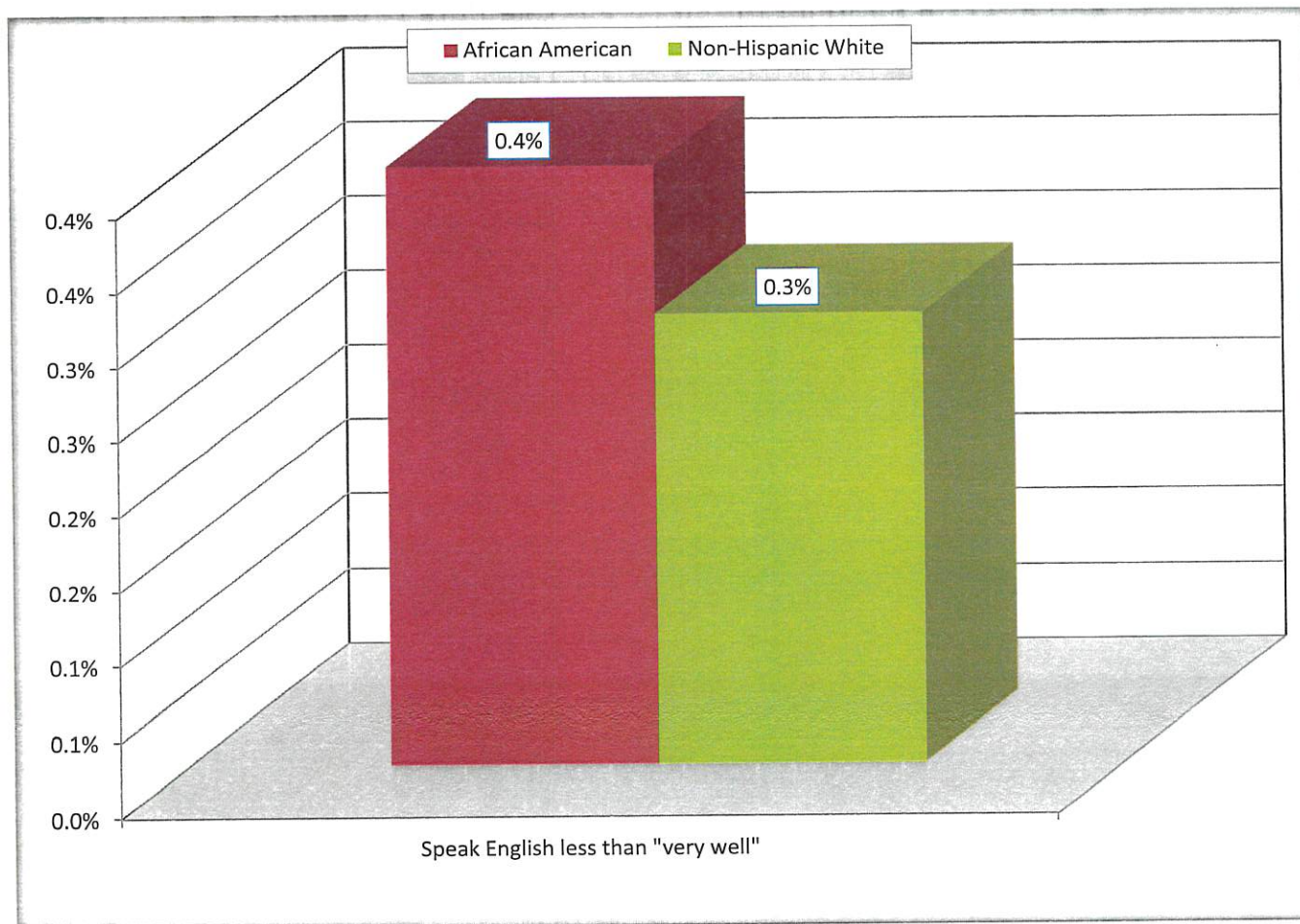
Mississippi



Source: S0201 SELECTED POPULATION PROFILE
Data Set: 2021 American Community Survey 1-Year Estimates

Speak English Less than "Very Well" (Population 5 Years and Over)

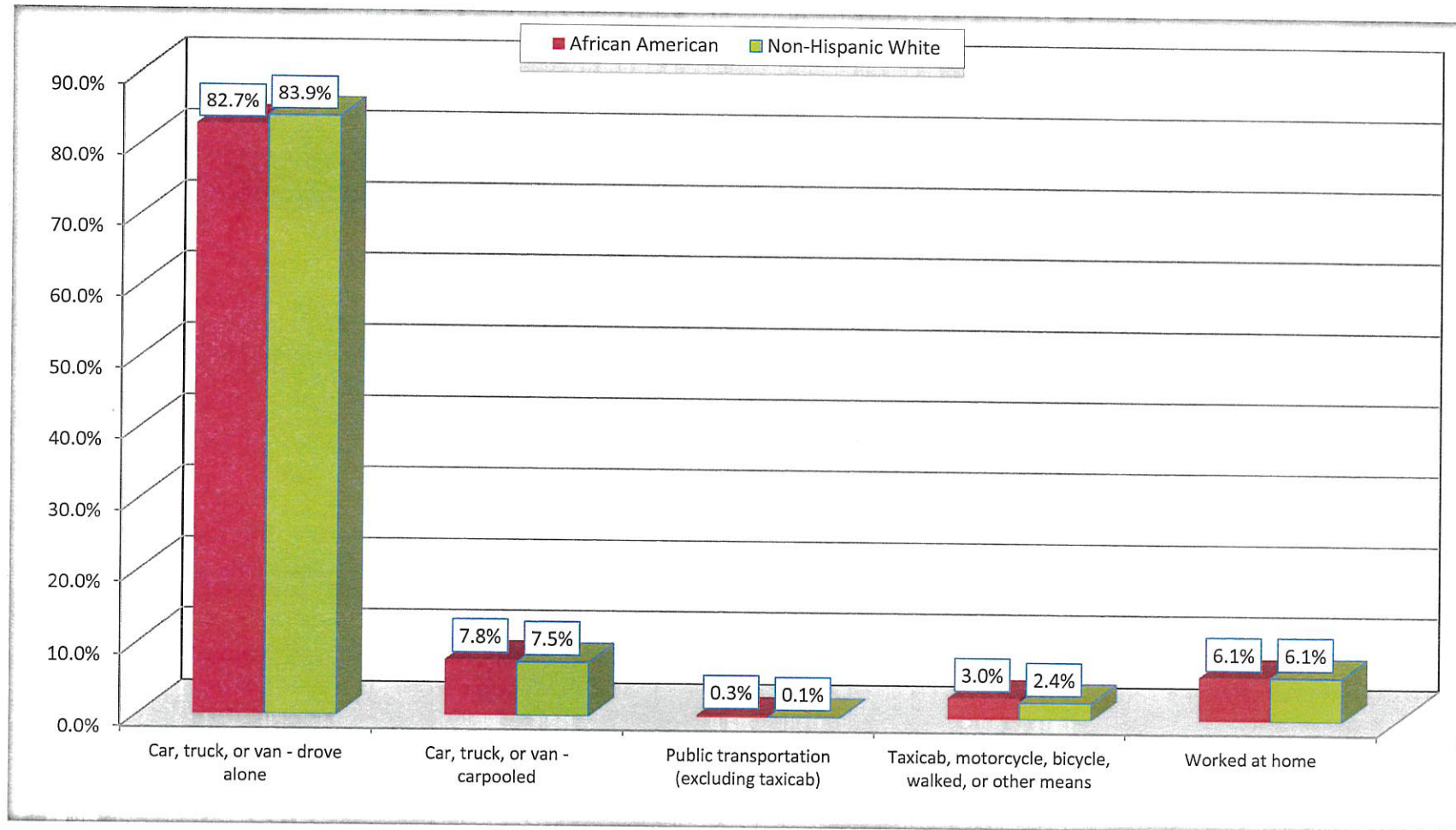
Mississippi



Source: S0201 SELECTED POPULATION PROFILE
Data Set: 2021 American Community Survey 1-Year Estimates

Means of Transportation to Work (Workers 16 Years and Over)

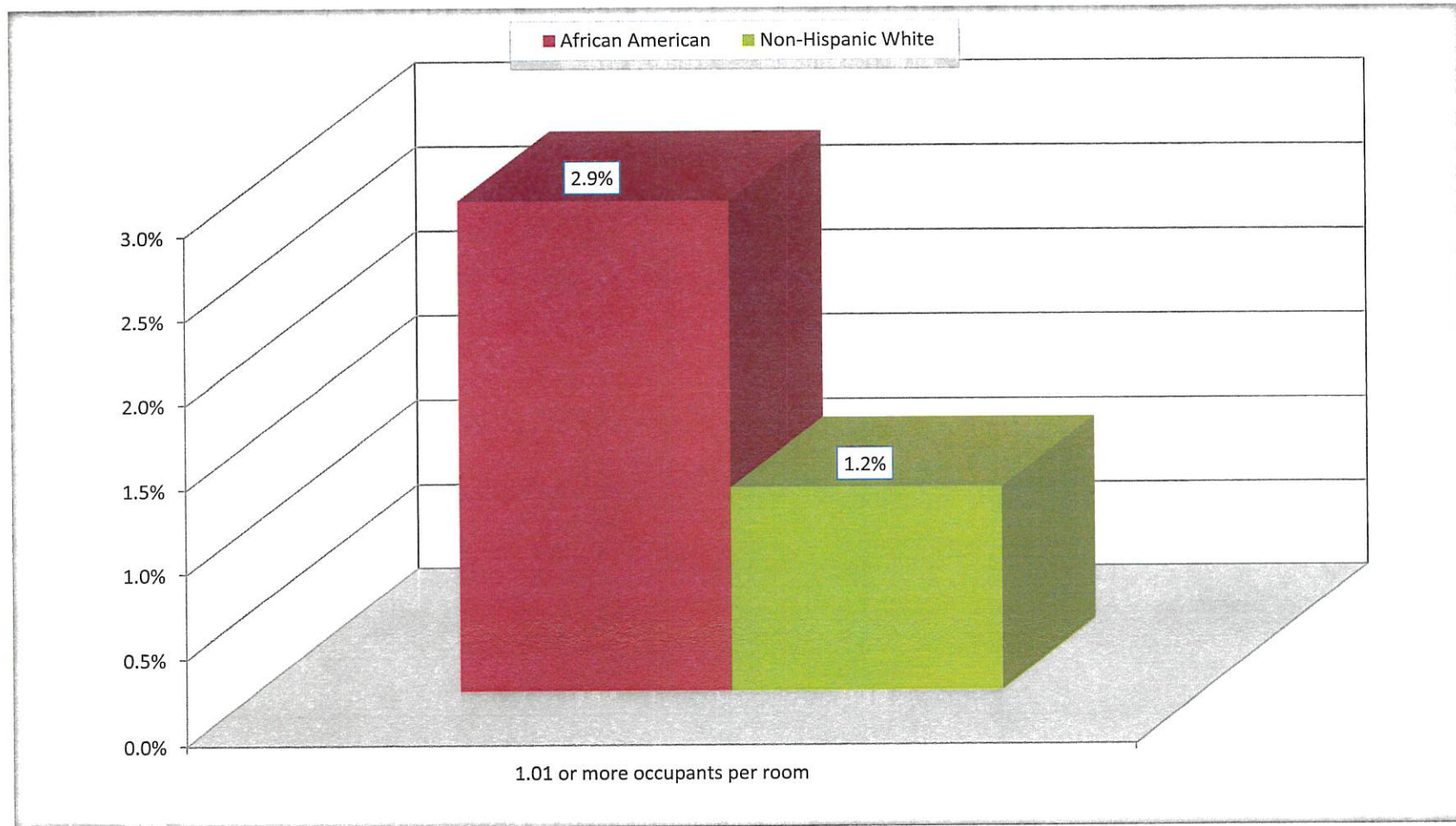
Mississippi



Source: S0201 SELECTED POPULATION PROFILE
Data Set: 2021 American Community Survey 1-Year Estimates

More than One Person per Room (Crowding) by Household

Mississippi



Source: S0201 SELECTED POPULATION PROFILE
Data Set: 2021 American Community Survey 1-Year Estimates

EXHIBIT C-2

PTX-001-123

Table: ACSSPP1Y2021.S0201

	Mississippi		
	Total population	Black or African American alone or in combination with one	White alone, not Hispanic or Latino
Label	Estimate	Estimate	Estimate
TOTAL NUMBER OF RACES REPORTED			
Total population	2,949,965	1,111,980	1,635,321
One race	94.90%	95.80%	100.00%
Two races	4.60%	3.40%	(X)
Three races	0.30%	0.60%	(X)
Four or more races	0.10%	0.20%	(X)
SEX AND AGE			
Total population	2,949,965	1,111,980	1,635,321
Male	48.70%	47.30%	49.50%
Female	51.30%	52.70%	50.50%
Under 5 years	5.90%	6.60%	5.10%
5 to 17 years	17.60%	20.10%	15.30%
18 to 24 years	9.80%	10.90%	8.90%
25 to 34 years	12.10%	13.10%	11.20%
35 to 44 years	13.00%	13.50%	12.40%
45 to 54 years	12.00%	11.50%	12.40%
55 to 64 years	12.80%	11.50%	14.00%
65 to 74 years	10.50%	8.70%	12.20%
75 years and over	6.40%	4.00%	8.40%
Median age (years)	38.6	34.3	42.2
18 years and over	76.50%	73.30%	79.60%
21 years and over	72.10%	68.30%	75.70%
62 years and over	21.00%	16.30%	25.30%
65 years and over	16.80%	12.70%	20.70%
Under 18 years	691,885	297,063	333,556

Table: ACSSPP1Y2021.S0201

	Mississippi		
	Total population	Black or African American alone or in combination with one	White alone, not Hispanic or Latino
Label	Estimate	Estimate	Estimate
Male	51.60%	51.30%	52.10%
Female	48.40%	48.70%	47.90%
18 years and over	2,258,080	814,917	1,301,765
Male	47.70%	45.80%	48.80%
Female	52.30%	54.20%	51.20%
18 to 34 years	646,857	266,919	328,900
Male	49.50%	47.90%	50.40%
Female	50.50%	52.10%	49.60%
35 to 64 years	1,114,278	406,451	634,958
Male	48.40%	45.80%	50.00%
Female	51.60%	54.20%	50.00%
65 years and over	496,945	141,547	337,907
Male	44.00%	41.80%	45.10%
Female	56.00%	58.20%	54.90%
RELATIONSHIP			
Population in households	2,865,632	1,068,583	1,600,232
Householder or spouse	56.90%	48.40%	63.40%
Unmarried partner	1.80%	2.10%	1.50%
Child	30.90%	35.40%	27.10%
Other relatives	8.00%	11.70%	5.70%
Other nonrelatives	2.40%	2.40%	2.40%
HOUSEHOLDS BY TYPE			
Households	1,129,611	406,632	658,587
Family households	65.80%	63.00%	67.20%
With own children of the householder under 18 years	25.90%	27.40%	24.10%

Table: ACSSPP1Y2021.S0201

	Mississippi		
	Total population	Black or African American alone or in combination with one	White alone, not Hispanic or Latino
Label	Estimate	Estimate	Estimate
Married-couple family	44.20%	27.20%	54.40%
With own children of the householder under 18 years	15.50%	8.70%	19.20%
Female householder, no spouse present, family	16.90%	30.20%	9.10%
With own children of the householder under 18 years	8.50%	16.60%	3.40%
Nonfamily households	34.20%	37.00%	32.80%
Male householder	16.10%	16.70%	15.60%
Living alone	13.80%	15.00%	13.10%
Not living alone	2.30%	1.70%	2.50%
Female householder	18.10%	20.30%	17.20%
Living alone	15.90%	18.20%	14.90%
Not living alone	2.20%	2.10%	2.30%
Average household size	2.54	2.59	2.47
Average family size	3.17	3.34	3.05
MARITAL STATUS			
Population 15 years and over	2,382,518	867,494	1,362,597
Now married, except separated	44.50%	27.80%	54.80%
Widowed	6.90%	6.70%	7.40%
Divorced	11.50%	11.10%	11.90%
Separated	2.50%	4.10%	1.50%
Never married	34.60%	50.30%	24.30%
Male 15 years and over	1,143,948	401,298	667,230

Table: ACSSPP1Y2021.S0201

	Mississippi		
	Total population	Black or African American alone or in combination with one	White alone, not Hispanic or Latino
Label	Estimate	Estimate	Estimate
Now married, except separated	46.60%	31.00%	56.30%
Widowed	3.50%	3.70%	3.50%
Divorced	10.30%	9.10%	11.20%
Separated	2.20%	3.90%	1.20%
Never married	37.40%	52.30%	27.80%
Female 15 years and over	1,238,570	466,196	695,367
Now married, except separated	42.50%	25.10%	53.40%
Widowed	10.10%	9.20%	11.20%
Divorced	12.70%	12.80%	12.60%
Separated	2.80%	4.30%	1.90%
Never married	31.90%	48.50%	21.00%
SCHOOL ENROLLMENT			
Population 3 years and over enrolled in school	728,376	306,726	357,780
Nursery school, preschool	4.90%	5.20%	4.60%
Kindergarten	4.80%	4.90%	4.80%
Elementary school (grades 1-8)	43.40%	44.40%	43.00%
High school (grades 9-12)	22.50%	21.90%	23.00%
College or graduate school	24.30%	23.60%	24.60%
Male 3 years and over enrolled in school	353,838	145,156	176,543
Percent enrolled in kindergarten to grade 12	74.30%	76.40%	73.40%

Table: ACSSPP1Y2021.S0201

	Mississippi		
	Total population	Black or African American alone or in combination with one	White alone, not Hispanic or Latino
Label	Estimate	Estimate	Estimate
Percent enrolled in college or graduate school	20.50%	18.20%	21.70%
Female 3 years and over enrolled in school	374,538	161,570	181,237
Percent enrolled in kindergarten to grade 12	67.40%	66.50%	68.20%
Percent enrolled in college or graduate school	27.90%	28.50%	27.50%
EDUCATIONAL ATTAINMENT			
Population 25 years and over	1,968,167	693,656	1,155,565
Less than high school diploma	13.50%	17.90%	10.10%
High school graduate (includes equivalency)	29.80%	33.10%	28.50%
Some college or associate's degree	31.90%	30.80%	32.90%
Bachelor's degree	15.40%	11.00%	18.10%
Graduate or professional degree	9.30%	7.20%	10.40%
High school graduate or higher	86.50%	82.10%	89.90%
Male, high school graduate or higher	84.00%	78.80%	87.70%
Female, high school graduate or higher	88.70%	84.80%	92.00%
Bachelor's degree or higher	24.80%	18.20%	28.60%

Table: ACSSPP1Y2021.S0201

	Mississippi		
	Total population	Black or African American alone or in combination with one	White alone, not Hispanic or Latino
Label	Estimate	Estimate	Estimate
Male, bachelor's degree or higher	21.50%	13.40%	25.90%
Female, bachelor's degree or higher	27.80%	22.10%	31.10%
FERTILITY			
Women 15 to 50 years	691,886	284,697	353,904
Women 15 to 50 years who had a birth in the past 12 months	36,472	14,155	19,844
Unmarried women 15 to 50 years who had a birth in the past 12 months	17,055	11,850	4,284
As a percent of all women with a birth in the past 12 months	46.80%	83.70%	21.60%
RESPONSIBILITY FOR GRANDCHILDREN UNDER 18 YEARS			
Population 30 years and over	1,792,073	618,015	1,068,682
Grandparents living with grandchild(ren)	3.80%	5.90%	2.70%
Grandparents responsible for grandchildren as a percentage of living with grandchildren	47.20%	51.10%	43.50%
VETERAN STATUS			

Table: ACSSPP1Y2021.S0201

	Mississippi		
	Total population	Black or African American alone or in combination with one	White alone, not Hispanic or Latino
Label	Estimate	Estimate	Estimate
Civilian population 18 years and over	2,243,834	811,791	1,292,976
Civilian veteran	6.90%	5.90%	7.70%
DISABILITY STATUS			
Total civilian noninstitutionalized population	2,885,936	1,081,392	1,607,449
With a disability	18.10%	17.40%	19.00%
Civilian noninstitutionalized population under 18 years	689,838	295,397	333,326
With a disability	6.40%	6.60%	6.10%
Civilian noninstitutionalized population 18 to 64 years	1,709,715	647,790	943,381
With a disability	16.40%	17.60%	15.90%
Civilian noninstitutionalized population 65 years and older	486,383	138,205	330,742
With a disability	40.30%	39.30%	40.80%
RESIDENCE 1 YEAR AGO			
Population 1 year and over	2,919,574	1,099,425	1,619,624
Same house	89.30%	87.40%	91.00%
Different house in the U.S.	10.30%	12.20%	8.80%
Same county	5.40%	7.60%	4.00%
Different county	4.90%	4.60%	4.90%
Same state	2.90%	3.20%	2.70%
Different state	2.00%	1.40%	2.20%
Abroad	0.30%	0.40%	0.20%

Table: ACSSPP1Y2021.S0201

	Mississippi		
	Total population	Black or African American alone or in combination with one	White alone, not Hispanic or Latino
Label	Estimate	Estimate	Estimate
PLACE OF BIRTH, CITIZENSHIP STATUS AND YEAR OF ENTRY			
Native	2,887,106	1,105,994	1,626,289
Male	48.60%	47.20%	49.60%
Female	51.40%	52.80%	50.40%
Foreign born	62,859	5,986	9,032
Male	49.10%	63.70%	35.60%
Female	50.90%	36.30%	64.40%
Foreign born; naturalized U.S. citizen	29,125	3,063	5,466
Male	44.00%	45.30%	35.90%
Female	56.00%	54.70%	64.10%
Foreign born; not a U.S. citizen	33,734	2,923	3,566
Male	53.60%	83.00%	35.10%
Female	46.40%	17.00%	64.90%
Population born outside the United States	62,859	5,986	9,032
Entered 2010 or later	37.20%	51.40%	27.60%
Entered 2000 to 2009	22.60%	19.90%	12.90%
Entered before 2000	40.30%	28.80%	59.50%
WORLD REGION OF BIRTH OF FOREIGN BORN			
Foreign-born population excluding population born at sea	62,859	5,986	9,032

Table: ACSSPP1Y2021.S0201

	Mississippi		
	Total population	Black or African American alone or in combination with one	White alone, not Hispanic or Latino
Label	Estimate	Estimate	Estimate
Europe	9.50%	4.10%	58.60%
Asia	32.00%	14.20%	14.40%
Africa	5.60%	46.90%	5.30%
Oceania	1.10%	0.00%	3.10%
Latin America	48.90%	34.80%	1.20%
Northern America	2.90%	0.00%	17.30%
LANGUAGE SPOKEN AT HOME AND ABILITY TO SPEAK ENGLISH			
Population 5 years and over	2,776,683	1,038,242	1,552,501
English only	96.20%	98.80%	98.90%
Language other than English	3.80%	1.20%	1.10%
Speak English less than "very well"	1.50%	0.40%	0.30%
EMPLOYMENT STATUS			
Population 16 years and over	2,340,485	849,911	1,341,038
In labor force	56.60%	55.80%	56.60%
Civilian labor force	56.00%	55.50%	56.00%
Employed	52.50%	49.60%	53.80%
Unemployed	3.60%	5.80%	2.20%
Unemployment Rate	6.40%	10.50%	3.90%
Armed Forces	0.60%	0.40%	0.70%
Not in labor force	43.40%	44.20%	43.40%
Females 16 years and over	1,219,487	460,037	684,058
In labor force	53.60%	56.80%	51.20%
Civilian labor force	53.40%	56.60%	50.90%
Employed	49.90%	50.80%	48.90%

Table: ACSSPP1Y2021.S0201

	Mississippi		
	Total population	Black or African American alone or in combination with one	White alone, not Hispanic or Latino
Label	Estimate	Estimate	Estimate
Unemployed	3.50%	5.80%	1.90%
Unemployment Rate	6.50%	10.20%	3.80%
COMMUTING TO WORK			
Workers 16 years and over	1,215,180	413,528	715,764
Car, truck, or van - drove alone	83.00%	82.70%	83.90%
Car, truck, or van - carpooled	7.80%	7.80%	7.50%
Public transportation (excluding taxicab)	0.20%	0.30%	0.10%
Walked	1.00%	1.00%	0.90%
Other means	1.70%	2.00%	1.50%
Worked from home	6.30%	6.10%	6.10%
Mean travel time to work (minutes)	25.2	23.8	26.1
OCCUPATION			
Civilian employed population 16 years and over	1,227,616	421,958	721,020
Management, business, science, and arts occupations	35.50%	26.20%	41.10%
Service occupations	16.00%	22.30%	11.70%
Sales and office occupations	20.80%	20.00%	21.60%
Natural resources, construction, and maintenance occupations	9.70%	5.80%	11.40%

Table: ACSSPP1Y2021.S0201

	Mississippi		
	Total population	Black or African American alone or in combination with one	White alone, not Hispanic or Latino
Label	Estimate	Estimate	Estimate
Production, transportation, and material moving occupations	18.00%	25.70%	14.10%
Male civilian employed population 16 years and over	619,454	188,428	386,190
Management, business, science, and arts occupations	27.40%	16.10%	33.00%
Service occupations	13.80%	19.50%	10.60%
Sales and office occupations	12.80%	11.00%	14.00%
Natural resources, construction, and maintenance occupations	18.70%	12.50%	21.00%
Production, transportation, and material moving occupations	27.20%	40.90%	21.40%
Female civilian employed population 16 years and over	608,162	233,530	334,830
Management, business, science, and arts occupations	43.70%	34.40%	50.40%
Service occupations	18.20%	24.60%	13.10%
Sales and office occupations	29.00%	27.30%	30.40%
Natural resources, construction, and maintenance occupations	0.50%	0.40%	0.40%

Table: ACSSPP1Y2021.S0201

	Mississippi		
	Total population	Black or African American alone or in combination with one	White alone, not Hispanic or Latino
Label	Estimate	Estimate	Estimate
Production, transportation, and material moving occupations	8.70%	13.40%	5.70%
INDUSTRY			
Civilian employed population 16 years and over	1,227,616	421,958	721,020
Agriculture, forestry, fishing and hunting, and mining	2.20%	1.00%	3.00%
Construction	7.10%	3.80%	8.30%
Manufacturing	12.90%	15.30%	11.80%
Wholesale trade	1.90%	1.50%	2.20%
Retail trade	11.70%	11.60%	11.80%
Transportation and warehousing, and utilities	7.30%	8.30%	7.10%
Information	1.10%	0.80%	1.10%
Finance and insurance, and real estate and rental and leasing	4.90%	3.60%	5.70%
Professional, scientific, and management, and administrative and waste management services	7.10%	5.90%	7.40%
Educational services, and health care and social assistance	24.70%	26.50%	24.30%

Table: ACSSPP1Y2021.S0201

	Mississippi		
	Total population	Black or African American alone or in combination with one	White alone, not Hispanic or Latino
Label	Estimate	Estimate	Estimate
Arts, entertainment, and recreation, and accommodation and food services	8.70%	10.30%	7.60%
Other services (except public administration)	4.70%	4.20%	4.80%
Public administration	5.80%	7.10%	4.90%
CLASS OF WORKER			
Civilian employed population 16 years and over	1,227,616	421,958	721,020
Private wage and salary workers	75.50%	73.80%	76.90%
Government workers	18.50%	22.10%	16.40%
Self-employed workers in own not incorporated business	5.80%	3.90%	6.50%
Unpaid family workers	0.20%	0.10%	0.20%
INCOME IN THE PAST 12 MONTHS (IN 2021 INFLATION-ADJUSTED DOLLARS)			
Households	1,129,611	406,632	658,587
Median household income (dollars)	48,716	33,541	61,318
With earnings	71.50%	70.60%	71.00%
Mean earnings (dollars)	70,442	49,440	83,781
With Social Security income	35.80%	31.90%	39.40%

Table: ACSSPP1Y2021.S0201

	Mississippi		
	Total population	Black or African American alone or in combination with one	White alone, not Hispanic or Latino
Label	Estimate	Estimate	Estimate
Mean Social Security income (dollars)	19,308	15,804	21,085
With Supplemental Security Income	8.50%	12.90%	5.90%
Mean Supplemental Security Income (dollars)	10,283	10,306	10,388
With cash public assistance income	2.10%	2.90%	1.60%
Mean cash public assistance income (dollars)	3,005	2,025	4,172
With retirement income	24.00%	18.80%	27.70%
Mean retirement income (dollars)	25,816	19,162	28,532
With Food Stamp/SNAP benefits	13.50%	24.60%	7.00%
Families	742,851	256,115	442,599
Median family income (dollars)	64,035	41,462	79,864
Married-couple family	67.10%	43.10%	80.90%
Median income (dollars)	82,789	66,479	87,967
Male householder, no spouse present, family	7.10%	9.00%	5.60%
Median income (dollars)	44,024	37,683	49,922
Female householder, no husband present, family	25.80%	47.90%	13.50%
Median income (dollars)	31,420	27,494	39,934

Table: ACSSPP1Y2021.S0201

	Mississippi		
	Total population	Black or African American alone or in combination with one	White alone, not Hispanic or Latino
Label	Estimate	Estimate	Estimate
Individuals	2,949,965	1,111,980	1,635,321
Per capita income (dollars)	26,941	18,368	33,374
With earnings for full-time, year-round workers:			
Male	496,076	147,033	313,472
Female	437,622	169,161	241,367
Mean earnings (dollars) for full-time, year-round workers:			
Male	62,386	43,074	72,431
Female	44,614	37,485	49,753
Median earnings (dollars) full-time, year-round workers:			
Male	47,546	35,986	53,246
Female	37,056	31,879	40,611
HEALTH INSURANCE COVERAGE			
Civilian noninstitutionalized population	2,885,936	1,081,392	1,607,449
With private health insurance	59.70%	47.60%	68.50%
With public coverage	40.20%	47.90%	36.30%
No health insurance coverage	11.90%	13.00%	9.80%

Table: ACSSPP1Y2021.S0201

	Mississippi		
	Total population	Black or African American alone or in combination with one	White alone, not Hispanic or Latino
Label	Estimate	Estimate	Estimate
POVERTY RATES FOR FAMILIES AND PEOPLE FOR WHOM POVERTY STATUS IS DETERMINED			
All families	14.40%	26.20%	7.70%
With related children of the householder under 18 years	22.40%	36.90%	11.60%
With related children of the householder under 5 years only	22.00%	41.90%	11.30%
Married-couple family	6.20%	10.40%	4.70%
With related children of the householder under 18 years	7.70%	12.30%	5.60%
With related children of the householder under 5 years only	8.00%	14.00%	6.10%
Female householder, no spouse present, family	34.70%	40.90%	23.30%
With related children of the householder under 18 years	46.80%	51.40%	37.40%
With related children of the householder under 5 years only	55.60%	61.30%	43.80%
All people	19.40%	30.90%	11.50%
Under 18 years	27.70%	44.50%	12.90%

Table: ACSSPP1Y2021.S0201

	Mississippi		
	Total population	Black or African American alone or in combination with one	White alone, not Hispanic or Latino
Label	Estimate	Estimate	Estimate
Related children of the householder under 18 years	27.60%	44.30%	12.80%
Related children of the householder under 5 years	31.40%	52.20%	13.40%
Related children of the householder 5 to 17 years	26.30%	41.70%	12.60%
18 years and over	16.80%	25.90%	11.10%
18 to 64 years	17.60%	26.80%	11.40%
65 years and over	13.80%	21.70%	10.30%
People in families	16.70%	29.30%	8.30%
Unrelated individuals 15 years and over	31.80%	38.10%	26.50%
HOUSING TENURE			
Occupied housing units	1,129,611	406,632	658,587
Owner-occupied housing units	69.70%	53.80%	80.10%
Renter-occupied housing units	30.30%	46.20%	19.90%
Average household size of owner-occupied unit	2.57	2.62	2.53
Average household size of renter-occupied unit	2.45	2.56	2.24
UNITS IN STRUCTURE			
Occupied housing units	1,129,611	406,632	658,587
1-unit, detached or attached	72.80%	63.80%	78.50%

Table: ACSSPP1Y2021.S0201

	Mississippi		
	Total population	Black or African American alone or in combination with one	White alone, not Hispanic or Latino
Label	Estimate	Estimate	Estimate
2 to 4 units	5.30%	9.90%	2.50%
5 or more units	8.70%	14.30%	5.20%
Mobile home, boat, RV, van, etc.	13.20%	11.90%	13.70%
YEAR STRUCTURE BUILT			
Occupied housing units	1,129,611	406,632	658,587
Built 2020 or later	0.50%	0.30%	0.70%
Built 2010 to 2019	11.20%	9.00%	12.40%
Built 2000 to 2009	17.10%	14.70%	18.40%
Built 1980 to 1999	30.50%	29.90%	31.00%
Built 1960 to 1979	26.60%	30.60%	24.30%
Built 1940 to 1959	10.30%	12.10%	9.40%
Built 1939 or earlier	3.70%	3.50%	3.80%
VEHICLES AVAILABLE			
Occupied housing units	1,129,611	406,632	658,587
None	6.30%	10.00%	4.30%
1 or more	93.70%	90.00%	95.70%
HOUSE HEATING FUEL			
Occupied housing units	1,129,611	406,632	658,587
Gas	39.20%	42.00%	38.10%
Electricity	58.90%	56.40%	59.90%
All other fuels	1.10%	0.60%	1.40%
No fuel used	0.70%	0.90%	0.50%
SELECTED CHARACTERISTICS			
Occupied housing units	1,129,611	406,632	658,587

Table: ACSSPP1Y2021.S0201

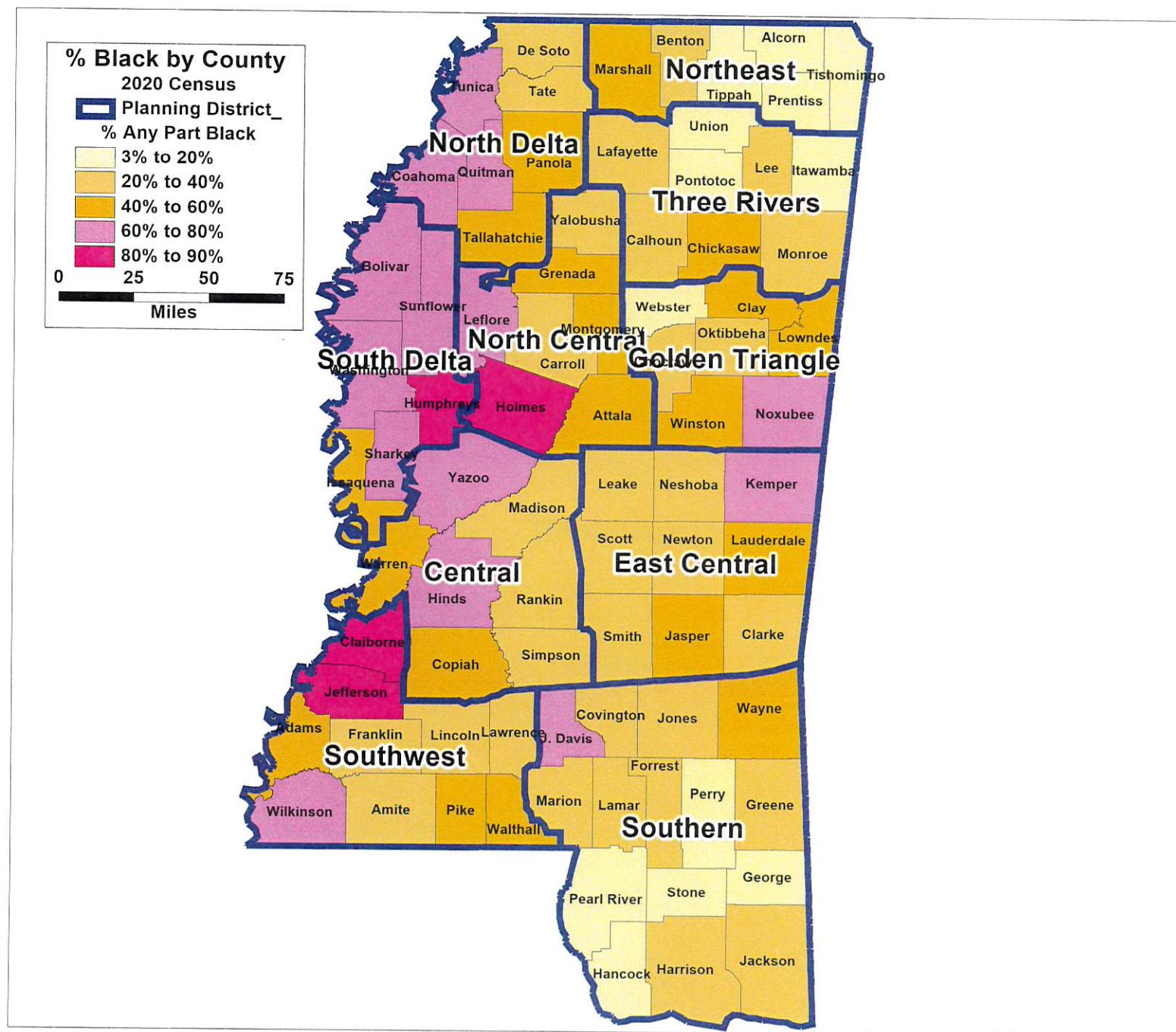
	Mississippi		
	Total population	Black or African American alone or in combination with one	White alone, not Hispanic or Latino
Label	Estimate	Estimate	Estimate
No telephone service available	1.30%	1.50%	1.10%
1.01 or more occupants per room	2.10%	2.90%	1.20%
SELECTED MONTHLY OWNER COSTS AS A PERCENTAGE OF HOUSEHOLD INCOME IN THE PAST 12 MONTHS			
Housing units with a mortgage (excluding units where SMOC cannot be computed)	381,256	102,018	255,879
Less than 30 percent	73.80%	62.10%	79.00%
30 percent or more	26.20%	37.90%	21.00%
OWNER CHARACTERISTICS			
Owner-occupied housing units	787,068	218,696	527,776
Median value (dollars)	145,600	95,800	162,200
Median selected monthly owner costs with a mortgage (dollars)	1,200	1,046	1,263
Median selected monthly owner costs without a mortgage (dollars)	356	340	364
GROSS RENT AS A PERCENTAGE OF HOUSEHOLD INCOME IN THE PAST 12 MONTHS			

Table: ACSPP1Y2021.S0201

	Mississippi		
	Total population	Black or African American alone or in combination with one	White alone, not Hispanic or Latino
Label	Estimate	Estimate	Estimate
Occupied units paying rent (excluding units where GRAP cannot be computed)	290,572	161,992	107,260
Less than 30 percent	47.80%	44.50%	52.00%
30 percent or more	52.20%	55.50%	48.00%
GROSS RENT			
Occupied units paying rent	301,468	169,064	110,380
Median gross rent (dollars)	831	796	870
COMPUTERS AND INTERNET USE			
Total households	1,129,611	406,632	658,587
With a computer	91.50%	88.70%	93.00%
With a broadband Internet subscription	81.80%	77.10%	84.40%

EXHIBIT D-1

PTX-001-144



PTX-001-145

EXHIBIT D-2

PTX-001-146

Mississippi Population by County (2000-2020)

County	2000 POP.	2000 AP_BLACK	2000 % AP_BLACK	2000 NH_White	2010 POP.	2010 AP_BLACK	2010 % AP_BLACK	2010 NH_White	2020 POP.	2020 AP_BLACK	2020 % AP_BLACK	2020 NH_White
Adams	34340	18228	53.08%	15701	32297	17538	54.30%	12485	29538	17192	58.20%	10926
Alcorn	34558	3899	11.28%	29977	37057	4388	11.84%	31313	34740	4797	13.81%	27738
Amite	13599	5820	42.80%	7636	13131	5471	41.66%	7516	12720	4982	39.17%	7434
Attala	19661	7908	40.22%	11369	19564	8276	42.30%	10866	17889	7846	43.86%	9410
Benton	8026	2960	36.88%	4936	8729	3286	37.64%	5229	7646	2813	36.79%	4565
Bolivar	40633	26574	65.40%	13365	34145	22030	64.52%	11241	30985	19770	63.81%	9946
Calhoun	15069	4351	28.87%	10339	14962	4243	28.36%	9851	13266	3630	27.36%	8662
Carroll	10769	3960	36.77%	6705	10597	3516	33.18%	6927	9998	3125	31.26%	6529
Chickasaw	19440	8050	41.41%	10887	17392	7405	42.58%	9254	17106	7688	44.94%	8584
Choctaw	9758	3015	30.90%	6613	8547	2614	30.58%	5803	8246	2449	29.70%	5559
Claiborne	11831	9987	84.41%	1783	9604	8143	84.79%	1353	9135	8094	88.60%	974
Clarke	17955	6273	34.94%	11518	16732	5819	34.78%	10674	15615	5299	33.94%	9950
Clay	21979	12435	56.58%	9332	20634	12099	58.64%	8276	18636	10989	58.97%	7196
Coahoma	30622	21302	69.56%	8898	26151	19851	75.91%	5918	21390	16590	77.56%	4285
Copiah	28757	14733	51.23%	13627	29449	15132	51.38%	13399	28368	14747	51.98%	12171
Covington	19407	6969	35.91%	12249	19568	6907	35.30%	12202	18340	6599	35.98%	11047
DeSoto	107199	12409	11.58%	90816	161252	36375	22.56%	113553	185314	58768	31.71%	108466
Forrest	72604	24588	33.87%	46225	74934	27665	36.92%	43766	78158	29492	37.73%	43121
Franklin	8448	3085	36.52%	5286	8118	2818	34.71%	5230	7675	2652	34.55%	4910
George	19144	1701	8.89%	16976	22578	1891	8.38%	20009	24350	1948	8.00%	20929
Greene	13299	3498	26.30%	9637	14400	3816	26.50%	10363	13530	3243	23.97%	9809
Grenada	23263	9559	41.09%	13414	21906	9234	42.15%	12350	21629	9697	44.83%	11258
Hancock	42967	3057	7.11%	38180	43929	3505	7.98%	37914	46053	4610	10.01%	37341
Harrison	189601	41030	21.64%	136141	187105	43621	23.31%	125741	208621	56407	27.04%	125092
Hinds	250800	154304	61.52%	92804	245285	170929	69.69%	68609	227742	161374	70.86%	58012
Holmes	21609	17081	79.05%	4395	19198	16108	83.90%	2993	17000	14489	85.23%	2359
Humphreys	11206	8041	71.76%	3006	9375	7042	75.11%	2133	7785	6258	80.39%	1423
Issaquena	2274	1434	63.06%	822	1406	907	64.51%	482	1338	773	57.77%	440
Itawamba	22770	1493	6.56%	20942	23401	1448	6.19%	21490	23863	1814	7.60%	21129
Jackson	131420	27857	21.20%	97461	139668	31195	22.34%	97670	143252	32534	22.71%	92881
Jasper	18149	9638	53.10%	8378	17062	9040	52.98%	7855	16367	8506	51.97%	7541
Jefferson	9740	8443	86.68%	1263	7726	6641	85.96%	1056	7260	6296	86.72%	891
Jefferson Davis	13962	8056	57.70%	5781	12487	7532	60.32%	4802	11321	6810	60.15%	4330
Jones	64958	17240	26.54%	45955	67761	19446	28.70%	44432	67246	19965	29.69%	41676
Kemper	10453	6111	58.46%	4068	10456	6344	60.67%	3665	8988	5605	62.36%	2812
Lafayette	38744	9780	25.24%	27611	47351	11407	24.09%	33538	55813	11869	21.27%	38766
Lamar	39070	5100	13.05%	33090	55658	11169	20.07%	42296	64222	15228	23.71%	43865
Lauderdale	78161	30069	38.47%	46587	80261	34739	43.28%	43312	72984	33152	45.42%	36534
Lawrence	13258	4277	32.26%	8835	12929	4012	31.03%	8567	12016	3791	31.55%	7807
Leake	20940	7899	37.72%	11631	23805	9755	40.98%	11611	21275	8475	39.84%	10069
Lee	75755	18811	24.83%	55367	82910	23239	28.03%	56854	83343	25309	30.37%	52854

PTX-001-147

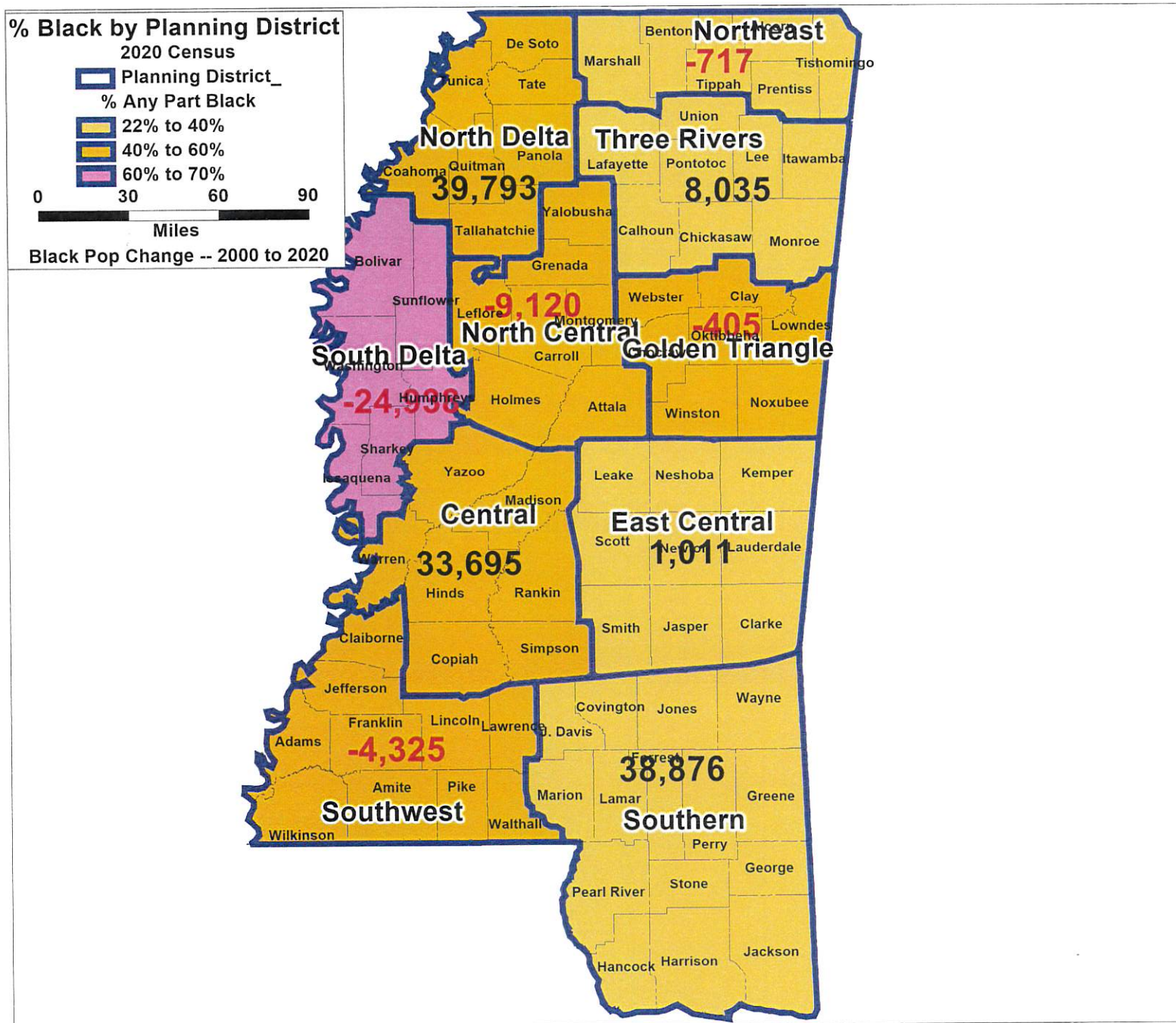
Mississippi Population by County (2000-2020)

County	2000 POP.	2000 AP_BLACK	2000 % AP_BLACK	2000 NH_White	2010 POP.	2010 AP_BLACK	2010 % AP_BLACK	2010 NH_White	2020 POP.	2020 AP_BLACK	2020 % AP_BLACK	2020 NH_White
Lefflore	37947	25806	68.01%	11238	32317	23495	72.70%	7930	28339	21283	75.10%	5963
Lincoln	33166	9896	29.84%	22866	34869	10596	30.39%	23702	34907	10881	31.17%	22996
Lowndes	61586	25809	41.91%	34489	59779	26327	44.04%	31847	58879	26747	45.43%	29363
Madison	74674	28137	37.68%	44613	95203	36718	38.57%	53287	109145	39708	36.38%	60273
Marion	25595	8229	32.15%	17063	27088	8879	32.78%	17661	24441	7888	32.27%	15721
Marshall	34993	17718	50.63%	16774	37144	17603	47.39%	18161	33752	15364	45.52%	16284
Monroe	38014	11776	30.98%	25832	36989	11587	31.33%	24847	34180	10682	31.25%	22487
Montgomery	12189	5507	45.18%	6570	10925	5001	45.78%	5769	9822	4504	45.86%	5094
Neshoba	28684	5640	19.66%	18630	29676	6442	21.71%	17797	29087	6863	23.59%	16426
Newton	21838	6683	30.60%	14095	21720	6660	30.66%	13599	21291	6727	31.60%	12796
Noxubee	12548	8736	69.62%	3667	11545	8301	71.90%	3113	10285	7425	72.19%	2639
Oktibbeha	42902	16170	37.69%	24973	47671	17724	37.18%	27825	51788	18827	36.35%	29224
Panola	34274	16626	48.51%	17191	34707	17048	49.12%	16981	33208	16522	49.75%	15642
Pearl River	48621	6023	12.39%	41181	55834	7231	12.95%	45911	56145	7406	13.19%	44101
Perry	12138	2759	22.73%	9194	12250	2520	20.57%	9514	11511	2215	19.24%	8868
Pike	38940	18608	47.79%	19841	40404	20987	51.94%	18564	40324	22068	54.73%	16769
Pontotoc	26726	3777	14.13%	22336	29957	4318	14.41%	23531	31184	4617	14.81%	23859
Prentiss	25556	3371	13.19%	21845	25276	3648	14.43%	21172	25008	3889	15.55%	20166
Quitman	10117	6977	68.96%	3065	8223	5770	70.17%	2369	6176	4637	75.08%	1484
Rankin	115327	19951	17.30%	92552	141617	27315	19.29%	108086	157031	34097	21.71%	111990
Scott	28423	11176	39.32%	15546	28264	10812	38.25%	14353	27990	10424	37.24%	13145
Sharkey	6580	4580	69.60%	1911	4916	3512	71.44%	1366	3800	2749	72.34%	962
Simpson	27639	9544	34.53%	17686	27503	9785	35.58%	17131	25949	9161	35.30%	15928
Smith	16182	3763	23.25%	12268	16491	3823	23.18%	12421	14209	3212	22.61%	10582
Stone	13622	2627	19.28%	10724	17786	3463	19.47%	13820	18333	3434	18.73%	13822
Sunflower	34369	24065	70.02%	9799	29450	21581	73.28%	7410	25971	18448	71.03%	6729
Tallahatchie	14903	8892	59.67%	5867	15378	8766	57.00%	5580	12715	7555	59.42%	4727
Tate	25370	7914	31.19%	17093	28886	8929	30.91%	19091	28064	8682	30.94%	18019
Tippah	20826	3359	16.13%	16890	22232	3737	16.81%	17404	21815	3776	17.31%	16609
Tishomingo	19163	626	3.27%	18067	19593	580	2.96%	18326	18850	577	3.06%	17169
Tunica	9227	6506	70.51%	2482	10778	7980	74.04%	2486	9782	7665	78.36%	1853
Union	25362	3855	15.20%	20969	27134	4112	15.15%	21649	27777	4319	15.55%	21560
Walthall	15156	6719	44.33%	8208	15443	6963	45.09%	8145	13884	5914	42.60%	7547
Warren	49644	21582	43.47%	27049	48773	23161	47.49%	24143	44722	21881	48.93%	20909
Washington	62977	40843	64.85%	21243	51137	36668	71.71%	13654	44922	32601	72.57%	11180
Wayne	21216	8097	38.16%	12955	20747	8165	39.36%	12243	19779	7928	40.08%	11313
Webster	10294	2165	21.03%	7919	10253	2087	20.36%	8007	9926	1914	19.28%	7691
Wilkinson	10312	7064	68.50%	3202	9878	7011	70.98%	2820	8587	5932	69.08%	2525
Winston	20160	8776	43.53%	11024	19198	8858	46.14%	9891	17714	8350	47.14%	8856
Yalobusha	13051	5057	38.75%	7827	12678	4886	38.54%	7606	12481	4814	38.57%	7331
Yazoo	28149	15274	54.26%	11558	28065	16156	57.57%	10477	26743	16252	60.77%	9184

PTX-001-148

EXHIBIT D-3

PTX-001-149



PTX-001-150

EXHIBIT E-1

PTX-001-151

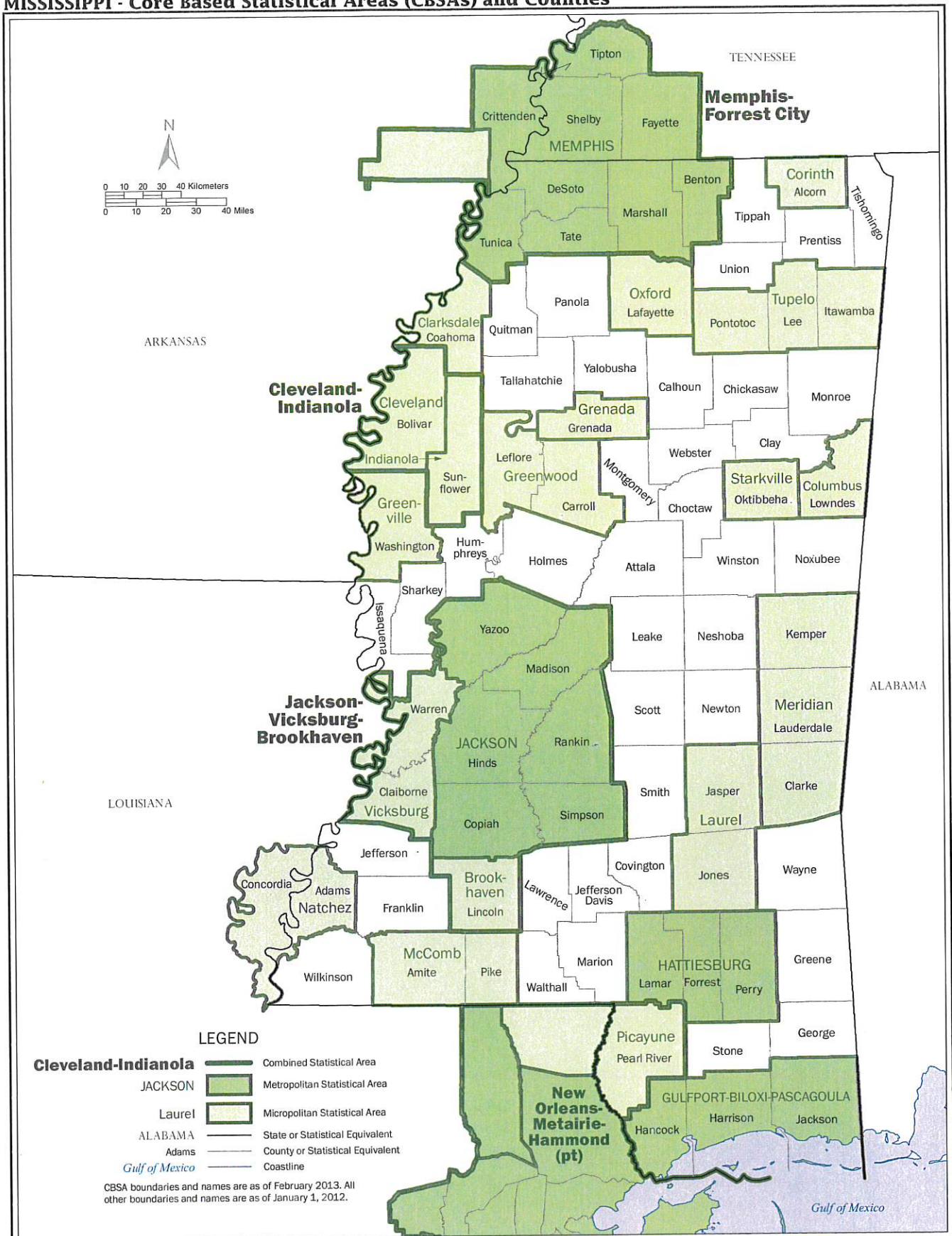
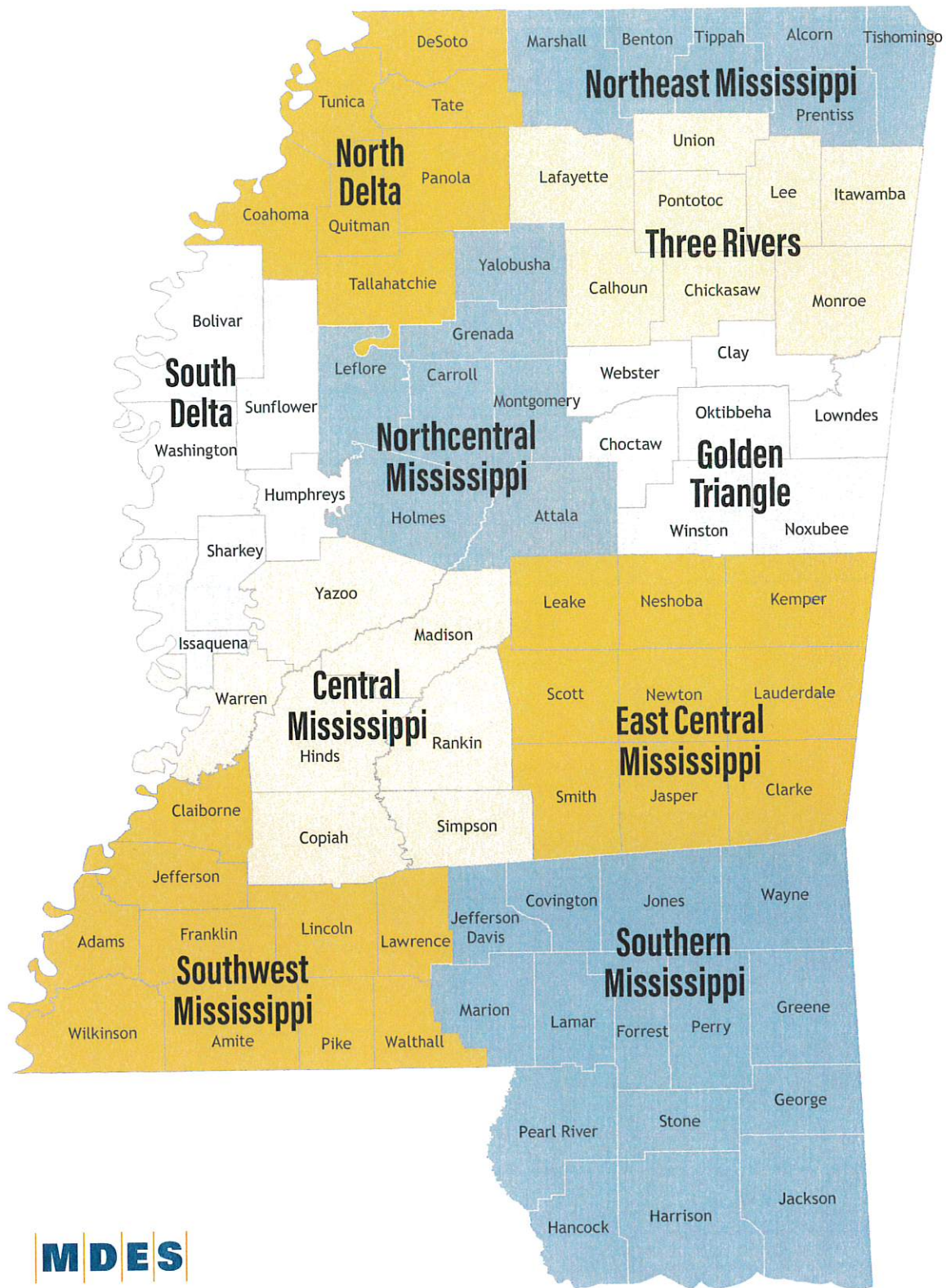
MISSISSIPPI - Core Based Statistical Areas (CBSAs) and Counties

EXHIBIT E-2

PTX-001-153

Mississippi Planning and Development Districts



MDES

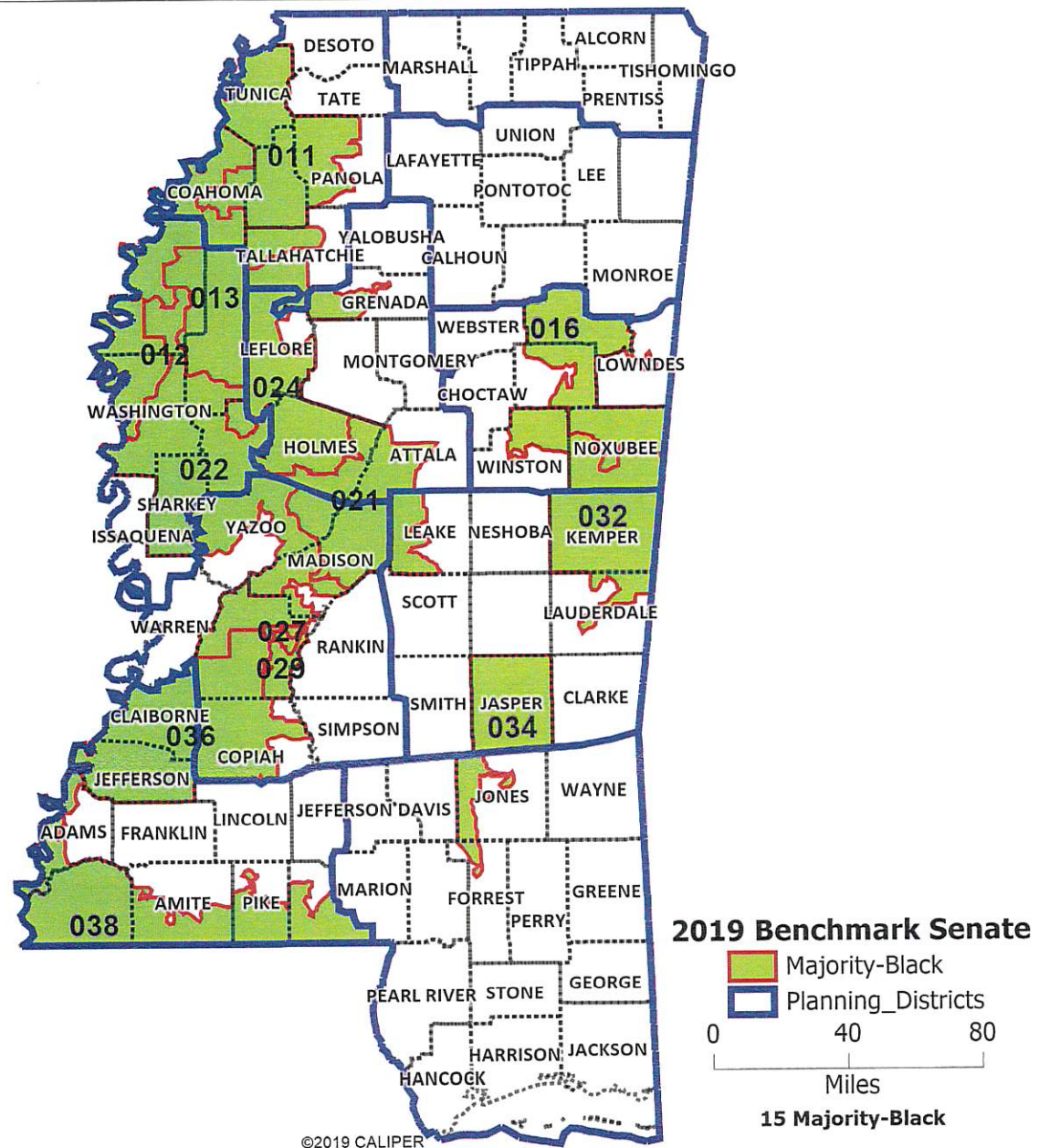
MISSISSIPPI DEPARTMENT of EMPLOYMENT SECURITY

mdes.ms.gov

PTX-001-154

EXHIBIT F

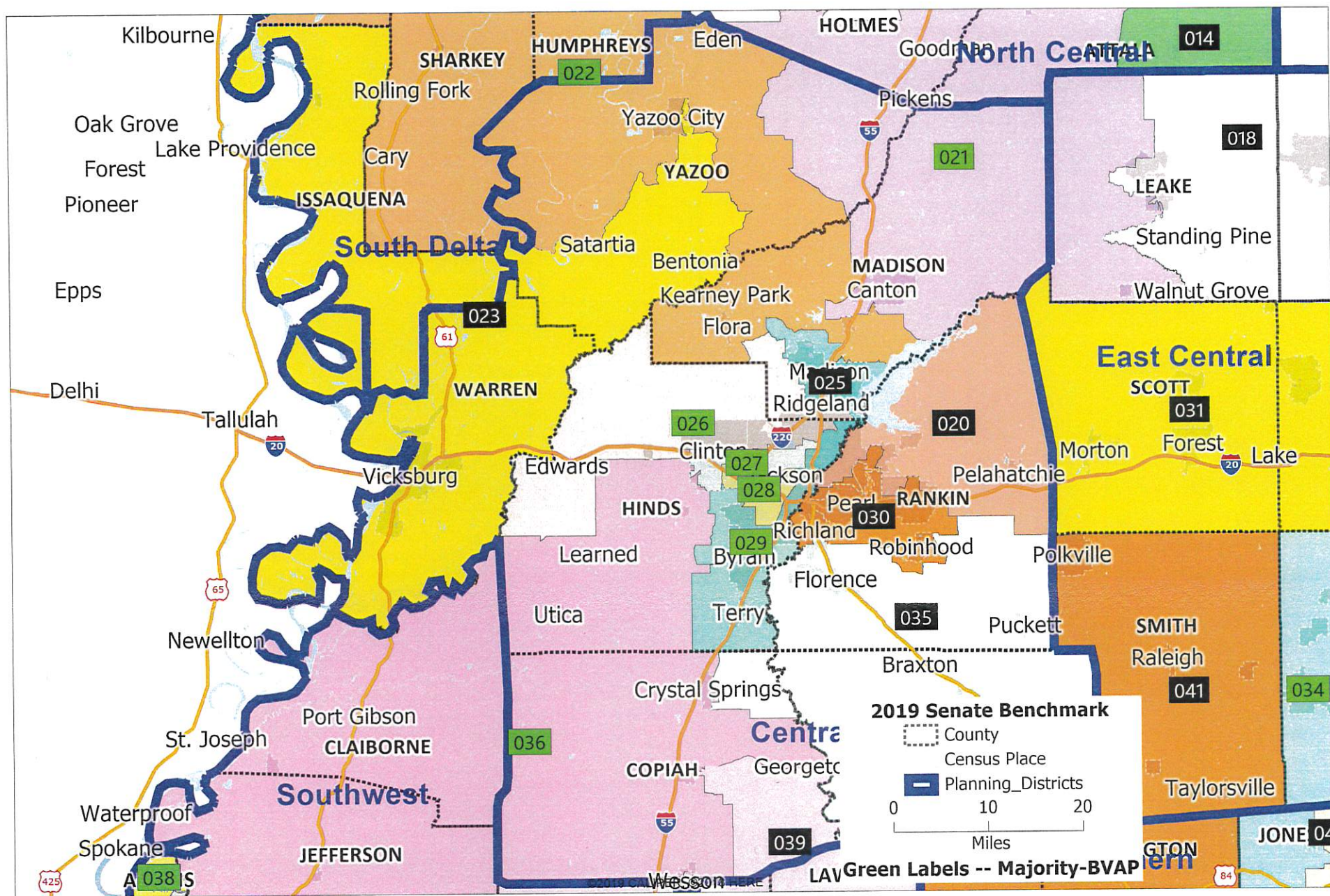
PTX-001-155



PTX-001-156

EXHIBIT G-1

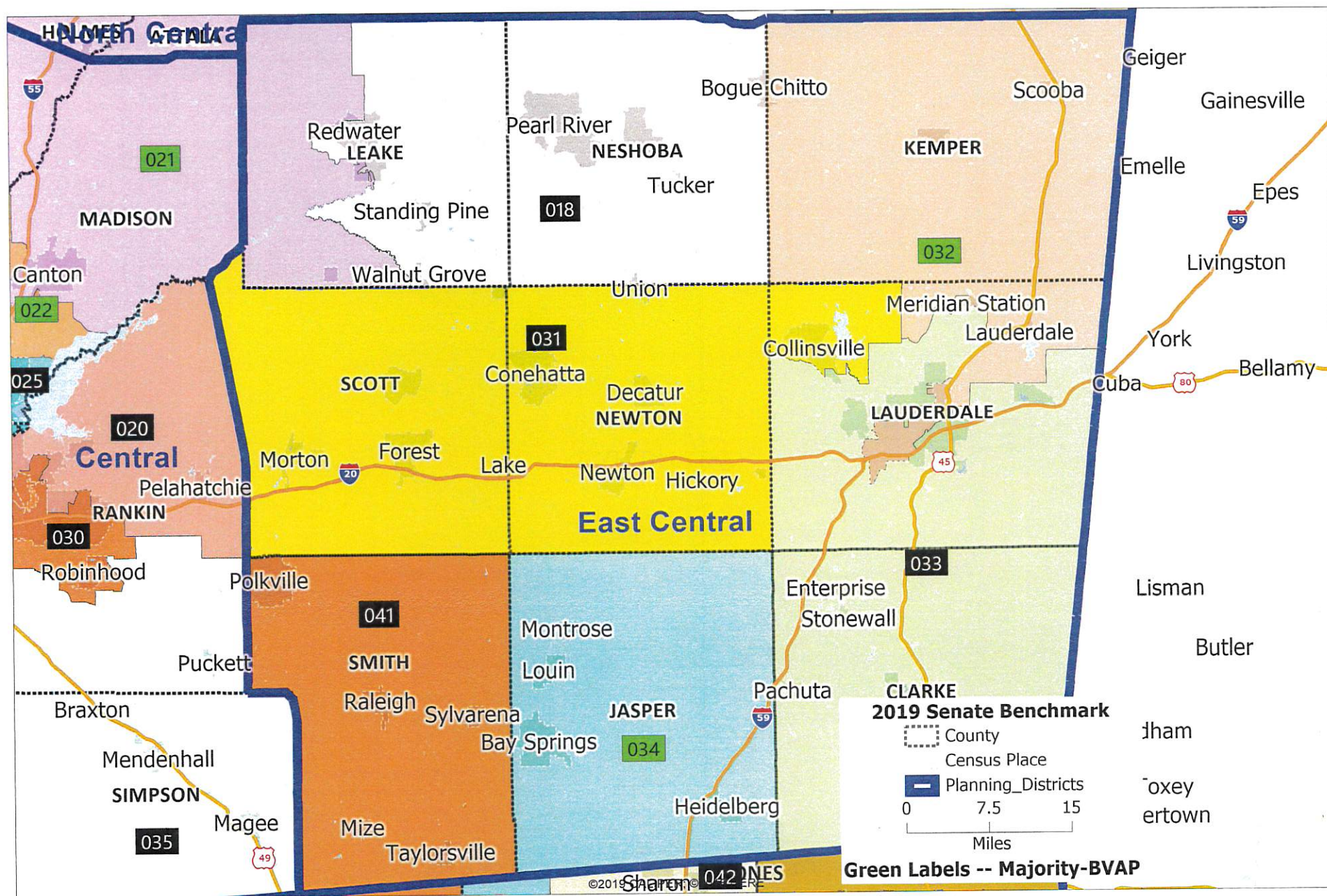
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PTX-001-158

EXHIBIT G-2

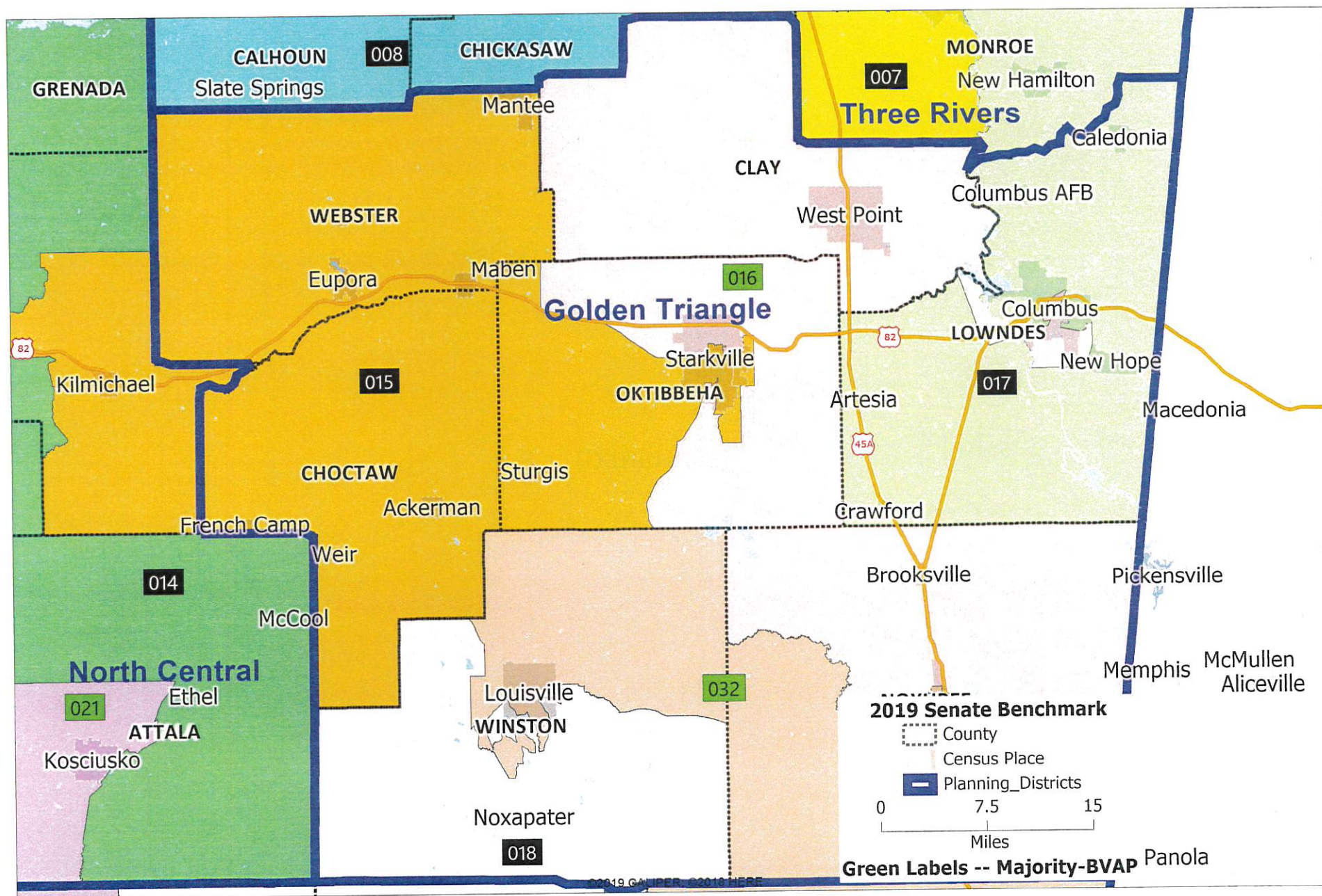
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PTX-001-160

EXHIBIT G-3

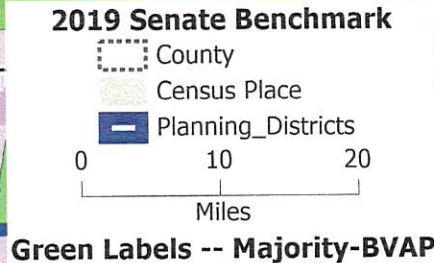
PTX-001-161



PTX-001-162

EXHIBIT G-4

PTX-001-163



PTX-001-164

EXHIBIT G-5

PTX-001-165

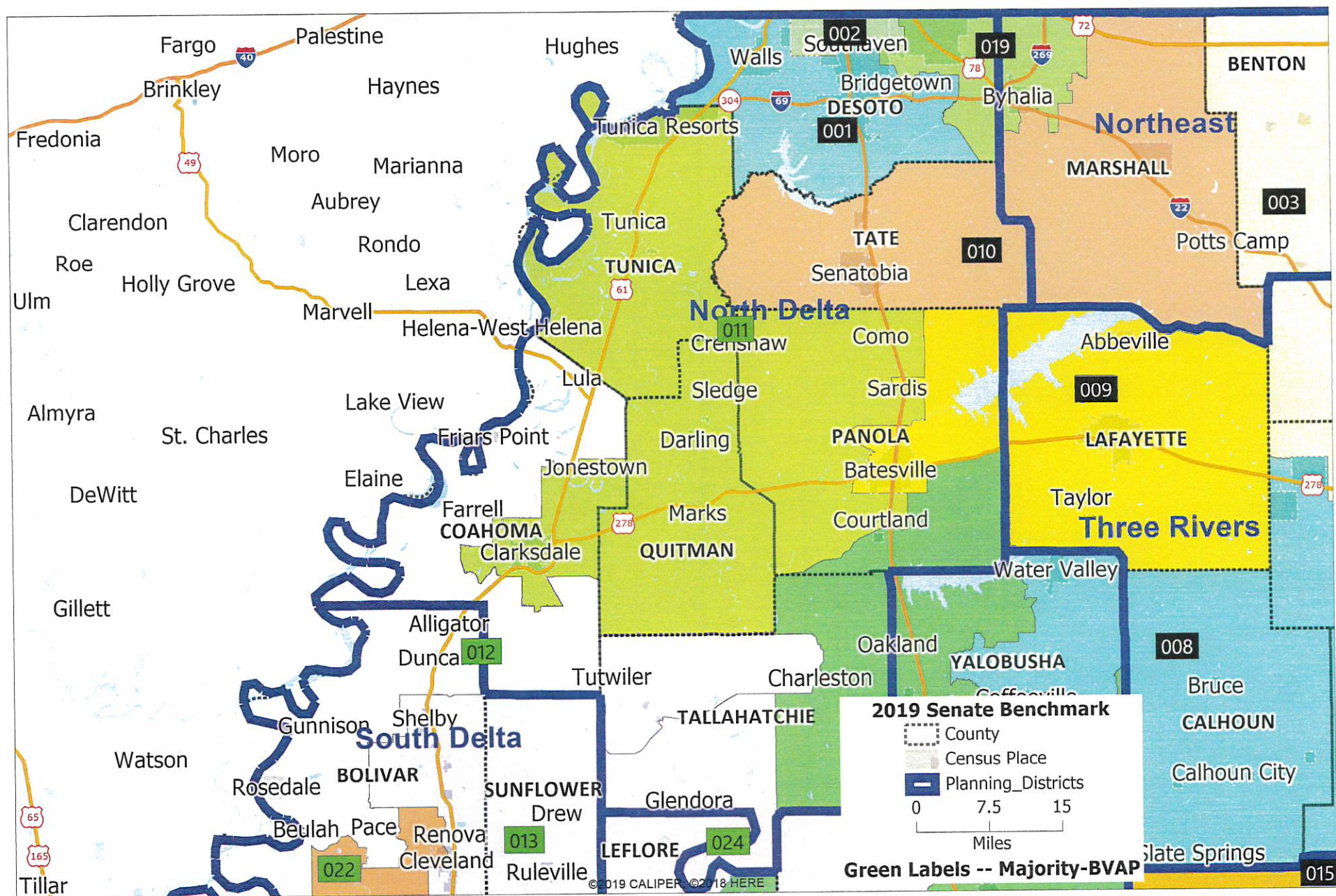


EXHIBIT G-6

PTX-001-167

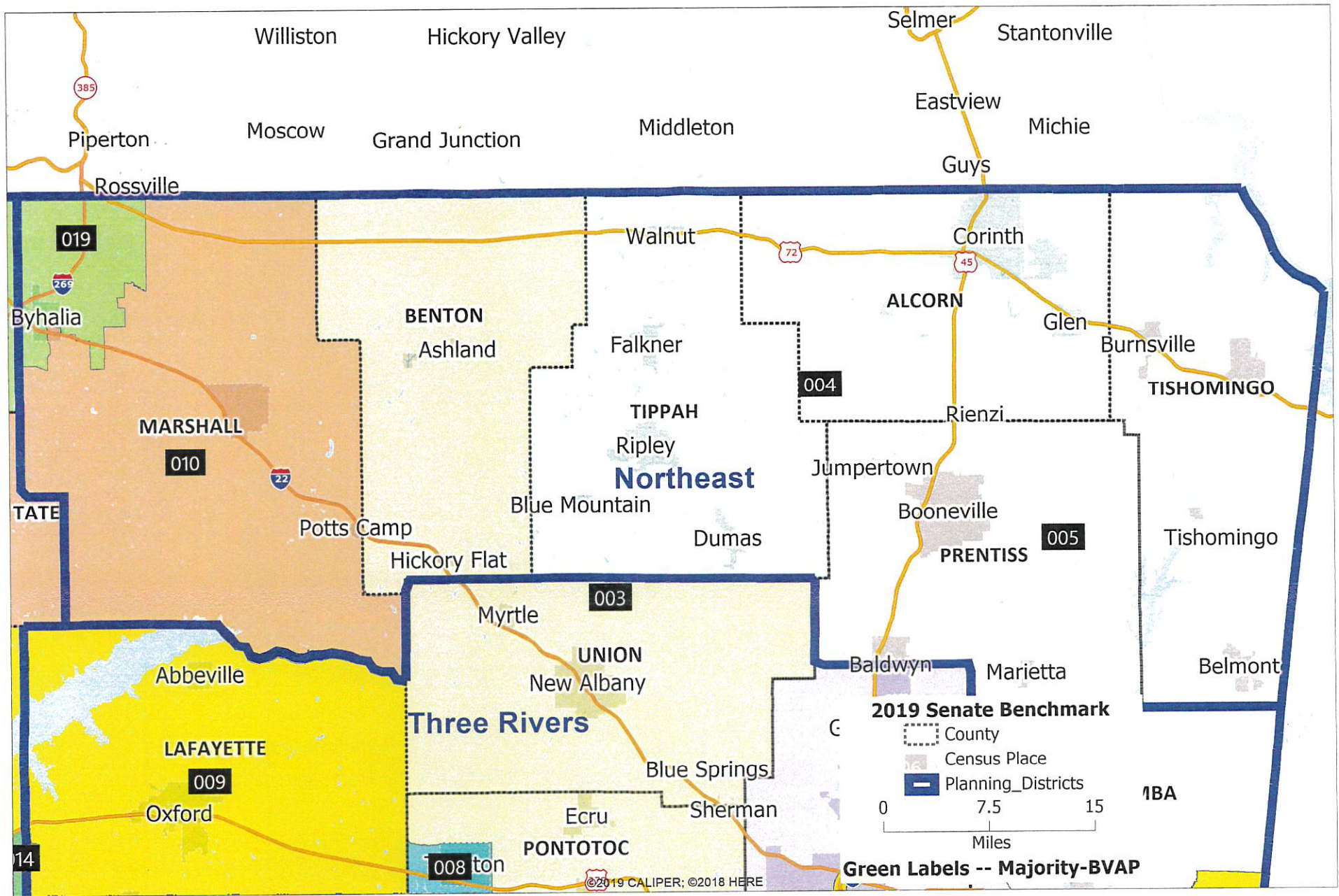


EXHIBIT G-7

PTX-001-169

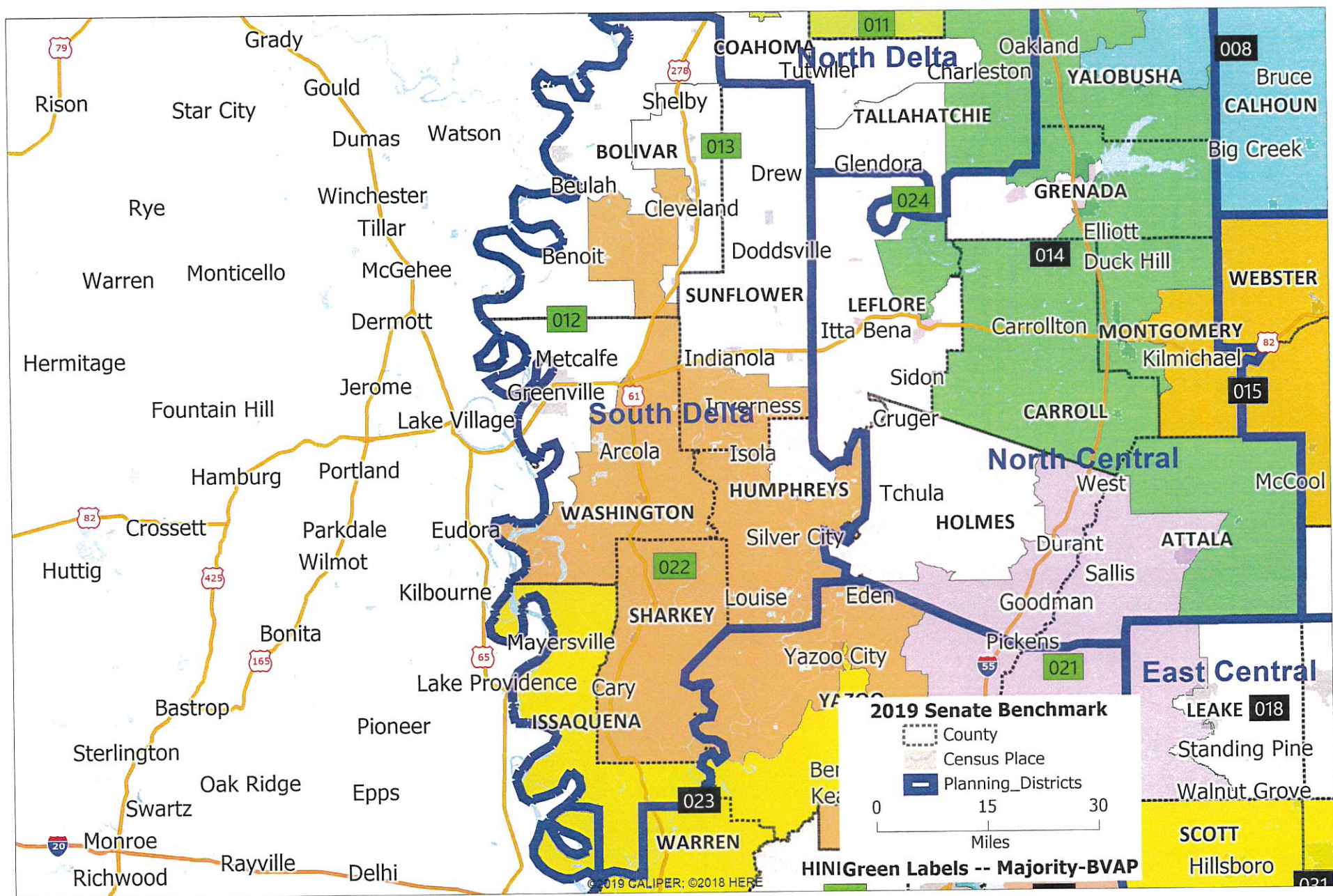
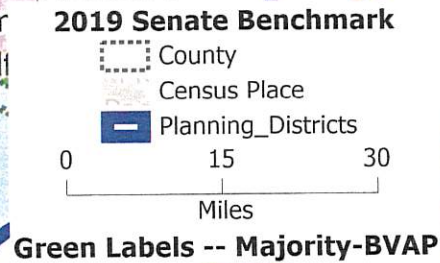


EXHIBIT G-8

PTX-001-171



PTX-001-172